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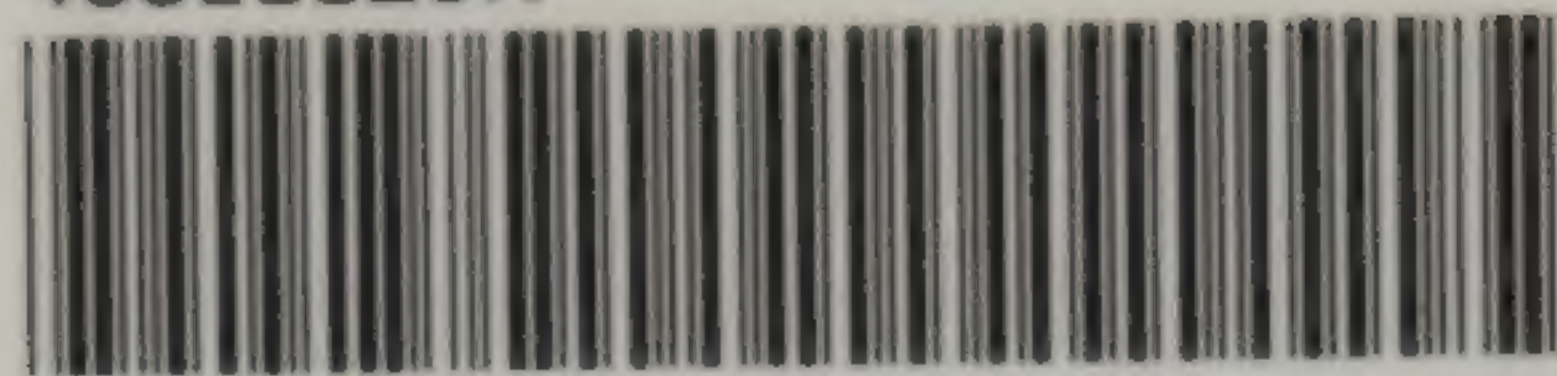
• THE • CHILD •

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# THE CHILD

## PHYSICALLY AND MENTALLY

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### ADVICE OF A MOTHER

According to the Teaching and Experience of Hygienic Science

GUIDE FOR MOTHERS AND EDUCATORS

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By **BERTHA MEYER**

*Author of "From the Cradle to the School" and other works*

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TRANSLATED BY FRIEDERIKE SALOMON

REVISED BY A. R. ALDRICH

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TO HER IMPERIAL AND ROYAL MAJESTY  
*Victoria,*  
EMPRESS AND QUEEN FREDERIC OF GERMANY  
AND PRUSSIA;  
THE MOST HIGH PROTECTRESS OF THE PEO-  
PLE'S WELFARE;  
THE NOBLE IDEAL FOR WOMEN'S WORK AND  
ASPIRATION ;  
DEDICATED IN DEEPEST DEVOTION AND GRATITUDE, BY  
SPECIAL PERMISSION, BY  
*THE AUTHORESS.*







## PREFACE.

**T**HIRTEEN years have elapsed since my esteemed friend, Dr. M. L. Holbrook, Editor of *The Journal of Hygiene*, translated my book, "From the Cradle to the School," according to Froebel, into English, and thus brought it before a large number of American mothers and kindergartners.

The work has since passed through several editions in Germany, in which additions and improvements have been made; but the science of hygiene has progressed during this period, and things which we scarcely knew then have become important factors in our daily life and in the education of our children.

It was, therefore, the desire of my heart to add this book as a supplement to the one already published, in which I might give the latest acqui-



tions of hygienic science, to assist mothers and educators to watch intelligently over the development of the children under their charge, thereby averting many dangers, and preserving or rescuing many to a happy career, who, without this intelligent help, would lead blighted lives or be victims of early death.

The book is the result of the most earnest study; and if it should, in any degree, bring comfort to mothers, instruction to educators, and blessing and health to children, I shall feel amply recompensed.

BERTHA MEYER.

*Berlin, Germany.*

*September, 1893.*



## CONTENTS.

---

	<i>Page.</i>
INTRODUCTION . . . . .	11

### CHAPTER I.

#### THE HISTORY OF HYGIENE.

From the earliest to the present time, with list of books and writings referred to . . . .	15
---	----

### CHAPTER II.

#### WHAT DOES HYGIENE INCLUDE?

Air and its components; Oxydation; The influence of oxygen on the lungs and the blood; The re- newing and reciprocal activities of Nature; Dan- gerous effect of exhaled gases; Change of Matter; The building up of the body out of elements in Nature; Food containing nitrogen and food with- out nitrogen; Change of heat into mechanical power; Humidity of air; The formation of rain, snow and hail; Forests as promoters of health and as preventives of inundations; The wind; The sun and its influence upon living organisms; Conditions of soil; Underground water and its influence upon epidemics; Pollution of the soil; Quality of water . . . . .	25
---	----



## CHAPTER III.

## THE INFANT DURING THE FIRST FEW WEEKS OF LIFE.

Food of the infant; Keeping the babe in the room of confinement; Arrangement of the room; First dress of the infant; The infant's sleep and its position while sleeping; Cleanliness of the mouth before and after nursing . . . . .	58
--	----

## CHAPTER IV.

USE OF THE NURSING BOTTLE TO SUPPLEMENT THE  
MOTHER'S MILK.

Utensils necessary, and their care; The preservation of the milk; Injurious effects of the sucking bag; The wet-nurse . . . . .	72
---	----

## CHAPTER V.

## BATHING AND WASHING.

Preparation of the bath; How to bathe; What is re- quired for the bath; Its importance as a means of health and strength, not only for children, but for adults; Cold bathing and swimming . . . .	78
---	----

## CHAPTER VI.

## REARING ENTIRELY BY HAND.

Obtaining wholesome cow's milk; Adulteration and fermentation of milk; Proportions in mixing milk; Food of the infant during the hot months; Milk-boiling apparatus of Dr. Soelet; Artificial substitutes for milk . . . . .	85
--	----



## CHAPTER VII.

## THE NURSERY AND THE INFANT'S FURTHER DEVELOPMENT.

Pure air and cleanliness of floor and surroundings; Clothing of the infant; Breathing through the nose; Vaccination and teething; Food during the first and second years of life; The teeth and their care . . . . .	93
--	----

## CHAPTER VIII.

## EDUCATION OF THE ÆSTHETIC SENSE IN THE NURSERY.

Forming the æsthetic sense; Decoration of the room; Games in the open air; The child's natural facul- ties and self-activity; The development of these in the nursery; Gymnastic exercises; Use of the left hand; Justice and obedience in the nursery; Simplicity in food and toys; Mental effect of training the senses . . . . .	108
---	-----

## CHAPTER IX.

## FURTHER DEVELOPMENT OF THE HEALTHY CHILD.

Inuring the child to such hardships as are consistent with health; Precautions while learning to sit up, to stand and to walk; Muscular exercises in the open air; Gymnastics for girls; Hygiene in re- gard to sleep; Education of the eye and the ear; School hygiene; School bath; Harmonious de- velopment of children . . . . .	125
--	-----



## CHAPTER X.

## CHILDREN'S DISEASES.

Indigestion; Inflammatory diseases; Weak eyes of the new born babe; Catarrh of the stomach and bow- els; Diseases of the respiratory organs; Croup and false croup; Diphtheria; Examination of the throat, and method of taking medicine; Measles; Scarletina; Chicken-pox; Fever; Whooping- Cough; Scrofula; Thrush and mumps; Conclud- ing remarks . . . . .	132
---	-----



## INTRODUCTION.

WE may say that, practically, life is bounded by physical conditions; and this is true of national, as of individual, life. Correct hygienic conditions, therefore, are the first concern of the State as of the individual.

The wise proverb of the ancients, "only in a sound body dwells a sound mind," was, also, the basis of Froebel's work, and, like the Grecians and Romans, he directed his methods of education to the forming, strengthening and preserving of both parts of the human being.\* Body and mind are intimately connected, one with the other: their life and action are common; upon the health of one depends that of the other. The conditions and activities of the mind are expressed by the body. The body contains all the instruments which are necessary for the development and forming of the mind. It is, therefore, easily seen that weakness, disease and suffering

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\* These two parts—the physical and mental—were, in Froebel's theory of education, completed only, and crowned by, the spiritual—the third element in the three-fold unity of man.



of the body prevent the mind from the development and exercise of its powers.

It may sometimes appear that a feeble mind exists in a healthy body; but this is only in appearance. Where the mind is diseased, health exists only in those parts of the body and those functions which are least dependent upon the brain and nerves—the unconscious operations of life—which are performed without mental direction such as breathing, chemical changes, the circulation of the blood, and digestion. And even these unconscious activities of the body stand in close relations with the brain and nerves; as, for instance, the action of the heart and of the stomach, and we easily recognize a direct influence of one upon the other—of the body upon the mind and of the mind upon the body. For instance, indigestion causes headache and debility: on the other hand, strong emotions often cause nausea, vomiting, and other bodily complaints.

Any mental disturbance, particularly if of long duration, produces emaciation, loss of strength, or bloating and other symptoms of disease. The brain and the nervous system are the most im-



portant parts of the human body; with them and through them the mind lives and works. They are the mediators between us and the outer world. We ought, therefore, to treat every disease of the mind as, also, a bodily illness.

Hygiene has for its object, from the moment of birth, the keeping away of everything injurious, and the procuring of everything that is beneficial to the best physical development, and the giving of such surroundings as will best promote complete mental and physical welfare.

What impresses itself upon the child during its earliest years will be the governing influence in mature life.

If, therefore, the body is a strong and healthy one, the future is reasonably secure; while upon a weakly body in infancy is likely to be formed a fragile and weak human being. Thus the comfort and happiness of the family are clouded, and society, of which we are all a part, is intimately concerned. Out of individuals the nation is built; and humanity consists of nations. So, the health of each individual is the concern of all.

We recognize, therefore, the importance, yea,



the sacredness, of hygiene, especially at the beginning of life, since infancy is threatened by greater dangers than any later period.

I need not tell educators, who are inspired for and in their work, that a knowledge of hygiene is of the greatest importance. Impregnated with the delightful teachings of Pestalozzi and Froebel, they know that it is their duty to guard the children entrusted to their care from everything hurtful; to do everything for the wholesome development of their physical and intellectual faculties, according to their age and individual needs.

We cannot fulfil the requirement of our time without a knowledge of hygiene, and this requirement should keep pace with the discoveries of science. To investigate and establish the relations of hygiene to all phases and conditions of life is, of course, the work of scientists; but it is our duty to acquaint ourselves with it as far as we can, and it lies with those who have to guide the first years of childhood to make use of the facts and principles that scientists have discovered for us, that we may give helpful and acceptable service in our work with children and, through this service, bless mankind.



## CHAPTER I.

### HISTORY OF HYGIENE

THE oldest cultured races—Egyptians, Israelites and Indian—had rules in relation to hygiene for adults and children.

Special care is necessary in the East in relation to diet on account of its hot climate. While, therefore, rules were made for the education of children, they were also made for the regulation of the diet.

Infants were to be nursed if possible; but if this was impossible, corn-flour was mixed with some animal's milk. All milk given to children had to be inspected. They counseled as to the position of children in sitting, the care of the sleeping-rooms, games, and many other things regarding the physical welfare of the child. They knew and practised vaccination, which knowledge was lost till the end of the last century.

The more educated Greeks were superior to all other nations in their knowledge of hygiene.



The Spartans educated such children as were not killed at birth, on account of infirmity, carefully, but with severity, so as to prevent enervation. All children were educated by the State after the seventh year. The food and dress were of the plainest, and physical training was required. To accustom the body to every kind of hardship and render it insensible to pain was the aim of Spartan education. The girls, also, were required to take part in gymnastics that they might become hardy.

#### *GREEK EDUCATION.*

Education was less vigorous in other Greek States, especially in Athens. Love of the beautiful prevailed there, and the object was to unite vigor and elasticity with beauty and grace. In order to train the mind for the good and beautiful, music, drawing and the sciences were taught. Education was directed to the establishment of harmony between the body and mind, because, "only in a sound body dwells a sound mind."

The ideas of beauty and "goodness," with the Greeks, gradually blended into one, and, finally, *one* word stood for both.



Both boys and girls remained in the care of women up to the sixth year, and were educated by the mother or nurse. Education proper began with the eighth year; and boys were sent away from home; while the girls remained under the paternal roof.

The places for physical exercise for the youth and men were lofty, airy halls, in gardens or parks, with swimming and hot baths connected. There were also rooms for wrestling, throwing the disc and lance; for running and jumping. Games were practised, especially the various ball games, in which girls and women took part; the aim of the teacher being to invigorate the body and give strength, grace and flexibility to the limbs. Fighting was practised to give courage and resoluteness and presence of mind in times of danger. The halls were decorated with the statues of heroes—princes and generals, victors in wrestling matches and other notables. Wise teachers and philosophers were here to train the youth in the good, the beautiful and the true.

Hippocrates taught of the treatment of children; how to distinguish between a healthy and



an unhealthy condition, also of the laws of growth and how to cure diseases when they did arise.

Socrates, Plato and Aristotle went often to these halls or gymnasiums and gave freely of their wise counsel. Plato wanted only men who were highly developed, alike in body and mind; and he regarded gymnastics as the best educational method for this purpose. He advised games for the children, and that play-grounds should be provided for them by the State. Girls and children of slaves, he thought, should take part in gymnastics, so as, also, to be harmoniously developed. He wanted the child to play up to its fifth year, and then for two years more to observe and investigate, and, later, the elements of science, music, and more difficult physical exercises were to be given. Aristotle shared Plato's views regarding the hygienic effects of games and bodily exercise as a relaxation after serious study.

#### *ROMAN EDUCATION.*

With the decline of the Greek nation these beautiful educational principles were adopted, in part, by the Romans, whose educators were



Greek slaves. In the early days of Rome the mothers nursed their children themselves, and personally directed their education through their early years; but when customs became more luxurious at Rome, the children were left, for care and education, to their nurses. Education had to be private, as the Romans had no public gymnasiums; still, they aimed to educate mind and body equally. Boys were taught to ride, run, jump, and swim, and were, also, practised in the handling of weapons. Effeminacy of mind and body were to be guarded from in every way. Girls were educated plainly and practically by the mother in spinning, weaving and embroidery; also in music and dancing. Boys and girls often studied together.

With the corruption of the Roman people, as with the Greeks, the education of the youth tended to effeminacy.

Claudius Gëlinus, in the second century, the greatest physician of the ancients after Hippocrates, made a special study of the food, clothing and dress of children, and also of gymnastics and their beneficial effect upon health. He taught that the



foundations of health and morals were laid in childhood,

Athenæus, at the end of the second, and early in the third century, gave wise counsel in regard to food, bathing, exercise and sleep, and believed that teaching the child should not begin till the seventh year, and that work and recreation should alternate; that the child should be guided systematically from the easy to the difficult, interspersing, at short intervals, games and exercises, till after the twelfth year; and these ought never to be wholly excluded.

Our German mothers nursed their children themselves, and kept them under their special care during infancy and early youth. The boys early practised swimming, riding and wrestling, and were trained to martial exercises and agricultural work; and girls were taught the various occupations of the house.

There was little progress after this in hygienic science till about the year 1000, when the Arabian physicians, Rhazes, Avicenna and others, gave excellent hints about diet and medicine for adults and children. Avicenna wrote of sleep, bathing,



games and food, and advised that teaching should not begin till the seventh year.

No further progress was made in hygiene till the middle of the fifteenth century, when the Humanists, through their study of the ancients, were led to the introduction of gymnastics as a part of education, into the schools of Italy. At Mantua and Urbino, gymnastics, fencing, wrestling, riding, archery and ball-playing were a part of the school curriculum. The system spread from Italy to Switzerland and Germany, and bodily exercise—climbing, lifting weights, running, hanging on swinging ropes—were part of the school requirement. These games and exercises became the fashion for youths in the towns, and many cities provided playgrounds for these recreations. Nuremberg and Cologne were among the number.

Towards the end of the fifteenth century, interest in hygiene was again revived, and especially in medical science. In 1563, Wuertz published a book giving his experience with children. Sadolet and Camerarius also wrote on hygiene and science.

Later, in the seventeenth century, physical ex-



ercise, in the higher schools, lost its popularity, although, during this time, Sommer, Riedlin and Lamperti gave discourses to mothers on the importance of exercise as a part of education, and John Graunt published statistics of mortality, with observations on the natural and political aspects of the subject.

In the eighteenth century hygiene made farther progress. Statistics of disease and its effect on mortality were collected. Popular essays were written on the health of infants and of children in the schools. Late in the century, Stoll, Essig and Hufeland wrote of the physical training of children. One of the principal topics in periodicals was the care of children. J. P. Frank wrote a stirring book on the education of children, dedicated "especially to mothers who have their own and their children's health at heart." Frank's writings break with all prejudices, and teach sound principles for the education of children from birth. He also gives statistics of sickness and mortality, and treats of school hygiene and the re-establishment of gymnastics as a part of education.



One of the greatest acquisitions of the eighteenth century, as of all time, is vaccination. We have seen that the Indian priests already knew and practised it with success.

Lady Montague, the wife of the English ambassador at Constantiople, had made an investigation of it, and had her own children vaccinated from the real cow-pox in England. The success produced such a sensation that George I. made many experiments with it, and as these succeeded, had his children vaccinated. Farmer Jeaty also tried vaccination on his wife and children with success. Dr. Jenner's experiments established confidence in the theory of vaccination, as a preventive of smallpox; and in the last year of the century the first institution for vaccination was opened in London, and in a few years 100,000 people had been vaccinated. Jenner's discovery spread and was practised in other countries, notably in Italy and Sweden.

Infinitely more than the eighteenth century has the nineteenth century advanced in a knowledge of medicine, chemistry and hygiene. Important works of men of science and educators



have spread this knowledge among all classes of people. Prominent among the many valuable works on these subjects are: "Levana oder Erziehungslehre," by Jean Paul; second book "Emile," by Rousseau; Pestalozzi's "Wie Gertrud ihre Kinder lehrt," and his other writings on elementary education, and all Froebel's writings on pedagogy. Many other books on the care and education of children are valuable.

May science and literature continue to deal with problems relating to the welfare of the human being, and we, who have the care of children, ever keep a heart that "watches and receives."



## CHAPTER II.

### THE RELATION OF HYGIENE TO LIFE.

THE office of hygiene is a vital one. It enters into every avenue of life, and concerns every activity—conscious or unconscious. The air we breathe; the soil upon which we live; the house we live in—its walls and floors, its doors and windows, and the sunlight that is let in through them; the school-house in which the children spend so many hours; the sick-room and nursery; the care of the body, its activities and rest, its dress and nourishment—in fact, everything is related to hygiene. It is, therefore, of great importance that we study to understand and put in practice its teachings.

The atmosphere necessary for our existence surrounds the earth for a distance of many miles. The pressure of this atmosphere around and within the body fixes the conditions of life. We could not live or move about without this sup-



port from without and within. The air consists, approximately, of four-fifths nitrogen and one-fifth oxygen, with which may be found a little hydrogen and carbonic acid. The part necessary to life is oxygen, which, however, we could not endure unmixed; but united with the large proportion of nitrogen it vitalizes the blood by supplying the heat-producing element, so that we can resist the cold of the frozen regions and also the heat of the equator, and preserve an even temperature of  $98.5^{\circ}$  F. in all climates and seasons.

Oxygen enters into chemical combinations with nearly all natural substances in the form of combustion. Heat is developed in the combination of every substance with oxygen. The fuel we use, be it wood or coal, or whatever substance, combines with the oxygen in the air and produces the bright flame we call fire. From this combustion vapor and carbonic acid are formed, and these escape through the chimney in what we call smoke.

If, however, the combustion of carbon is incomplete, then carbonic oxide gas is generated, which is extremely poisonous, and a dangerous enemy,



since it penetrates through the stove or furnace, and does not betray its presence by any odor. This gas burns with a very beautiful blue flame. There is probably a great deal more carbonic oxide poisoning than we are aware of, through our defective heating and cooking apparatus.

Only by a thorough and constant ventilation can we counteract these dangers in our houses. Nausea, dulness and dizziness are often experienced without suspecting that the impure air of our comfortably-heated rooms acts as a poison to our bodies. In some cities the boards of health forbid the use of dampers which shut off the direct draft through the chimney. An open draft in the stove or an open fireplace assist ventilation.

#### *COMBUSTION IN OUR BODIES.*

When combustion—the union of a substance with oxygen—is less powerful, no flame will arise from the heat. This is the case with the union of the constituents of our blood with oxygen, which is supplied through the lungs at every breath. The oxygen unites with the carbon of the blood and produces carbonic acid, which the



lungs exhale while they inhale oxygen out of the air to continue the combustion in the blood, thereby giving it its beautiful red color as well as heat. This exchange of carbonic acid for oxygen through the lungs is a process of life with all animals, as with man, and we naturally enquire, What becomes of all this exhaled poison?

Nature's wise economy provides for this, and plant life requires just this material, which is exhaled through the lungs in animal life. What is poison to us becomes nourishment for vegetable life, which, in turn, serves us by taking in only the carbon, leaving the oxygen for human and all living beings. So, growing plants in our rooms are useful; though at night they should be removed from sleeping apartments, as they also sleep then, and give off carbonic acid.

Fragrant flowers should not remain in the sick- or sleeping-room, as the fragrance has a slightly intoxicating effect when long inhaled,

#### *CHEMICAL FORCES IN NATURE.*

Professor Richard Meyer, in his lecture, "The Working of the Chemical Forces in Nature," says: "The organic substance which forms the



plant out of carbonic acid, water and ammonia is again transmitted, through the process of oxydation in the animal body, into the same inorganic substance which serves anew as nourishment to the plant. The elements which form the component parts of organic beings are thus in constant circulation, by which they enter sometimes into the one and sometimes into the other kingdom, thus ever renewing reciprocal life."

Liebig has demonstrated this relation very ingeniously in "The World in a Glass of Water:"

"There are water animals and plants in a tumbler of water. The animals or plants by themselves would die, while the mixed colony thrives on the mutual needs and services of each. This will, however, partly take place without the participation of animal life.

"The abundant vegetation of the tropics is more than the animals need, and this surplus is disposed of through the universal law of decay, which, in time, puts an end to all organisms. But through its decay, which is a process of oxydation, this organic substance becomes inorganic substance, which serves, again, to support new



generations of plants. This process is the same with the dead bodies of animals, and even of man. Everywhere decay and death are the required conditions for new life.

“The animal must continually give new substance for vegetable life, and also renew its own life from the vegetable world. The tree not only replaces the foliage each year, which the previous autumn destroyed, but must make new wood, putting a new ring yearly around its trunk. And all vegetation must provide for renewed life in a more vital sense by producing seed for increased individual life like its own.

“Animal life, unlike vegetable life, ceases to grow in size after a few years; the change of matter must, therefore, have another cause, which we find in the activities of the body and brain, which are a constant waste of force.”

#### *HUMAN POISON.*

Free carbonic acid sometimes exists in caves, as in the dog's grotto at Mofetten, in Italy; and because it is heavier than air, and lies near the ground, animals are sometimes killed by coming



in contact with it. In mines and wells this gas is often destructive to men. Mixed with water, however, it is harmless, and makes a refreshing drink. Nature, as a rule, keeps the air wholesome, and danger comes to men through ignorance and carelessness. When we live in close rooms we invite danger by breathing our own exhalations. Physiologists tell us that there is a poisonous substance, beside the carbonic acid, originating in the body, which alone would be fatal to health. Professor Dubois Reymond calls this gas "human poison."

Fortunately, the air will, more or less, penetrate through the windows and walls of our houses, and so we are preserved in spite of ourselves. But our school buildings, concert halls and churches are full of poison for us, and far greater attention should be given to their ventilation.

The air in cities—in close alleys and streets—cannot, of course, be as pure as it is in the country; but we should let in all that is possible, for it is better than the close air of the houses. But those who live in cities ought to get to the field,



the forest, the mountains and sea side as often as possible, and thus quicken their pulses and renew their lives.

### *THE VOICES WITHIN US.*

A lamp will be immediately extinguished placed in a vessel without oxygen. A mouse or bird thus placed will die.

We have seen that oxygen in its union with carbon in the blood furnishes the heat necessary to life. Now, in the contact of the surface of the body with the air, and by exhalations through the lungs and through the pores of the skin, there is constant loss of heat, and we naturally ask, Where does the blood get its supply of carbon for this constant combustion? The voices within us, which we call hunger and thirst, answer this question. By means of food and drink we supply our blood with new material for building and warming the body. Carbon is contained in our food, and exhaled as carbonic acid; but we need other substances besides carbon, for bones, muscles, nerves, fat, skin, hair, nails, etc., not only contain carbon, but hydrogen, nitrogen,



and a little sulphur and phosphorous. All these are furnished, not in the form of teeth, nails, hair, skin, etc., but we find in food everything necessary to build these, and we can select the right proportions of carbonaceous and nitrogenous food for all the needs of the body.

Oxygen, hydrogen, nitrogen and carbon are the principal elements of both animal and vegetable life. It is, therefore, plain that by eating food which contains these elements, the blood is furnished with the materials necessary for building up, warming and supporting the body. In winter we need more carbonaceous or heat-producing food than in summer. The Laplander drinks cod-liver oil, which contains much carbon; people in warm climates live principally on fruit, which is mostly water, and contains less nitrogen and but little carbon. In this way the equal temperature of the body is kept up in all climates. "A hungry man feels the cold more than a well-fed man, and an aged person resists the cold less than a young one, because the process of oxydation is slower." \*

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\* Richard Meyer.



*HEAT CHANGED TO FORCE.*

We get more carbon, however, with our food than we need for bodily warmth. We have seen that our lungs are like an engine which consumes the fuel, and produces always a supply of oxygen.\* But the engine is also heated, and the steam which is produced and compressed in the machine, changes the excess of heat into power, which, as we know, drives engines of various capacities. Just so in our bodies; the excess of heat which is produced from our food is changed into power—into motion and labor. This surplus averages twenty per cent. of all the heat produced in the body. This gives us the power for all our activities—conscious and unconcious.

*PLANT ACTIVITIES.*

Vegetable life stores up the necessary elements for animal heat and work. Let us now consider the chemical process in the plant, corresponding to those in the animal body; for the plant, too, has its activities. We see this in the outward growth, and in the flow of the sap within. Chem-

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\*See Victoria-Bibliothek fuer die Frauen des Deutschen Volks von Bertha Meyer, Heft I "Die Ernaehrung," von A. Bernstein.



ical processes are as complete in plants as in the human body. The plant separates from carbonic acid and water a large part of the oxygen they contain, and this separation requires expenditure of power, as the oxygen is firmly combined with the carbonic acid and water. This power we must trace to some source; and can find it in nothing else but the mighty action of the sunlight. The plant can change carbonic acid and water into organic substance only in the sunlight. The insignificant grains of the green-leaf pigment are the scene upon which the first act of this chemical drama is played. These grains have wonderful power to absorb the sunlight, especially certain components of them which have the power to excite chemical action in the leaves. Sunlight is, therefore, the source of all plant life as of animal life.

*THE PART MINERALS PLAY.*

We cannot here examine the close relation of the lowest orders of plant and animal life—how mimosa and other plants show movement; how insect-eating plants produce a substance which will dissolve the insects—but we must touch upon the



great part which minerals play in the operations of nature. The lichens which are often seen covering the rocks consist of a colony of fungi and algæ which live promiscuously together. The fungi, like animals, are unable to dissolve carbonic acid, and so hand it over to their associates, along with the mineral substance from the rock, which they extract with their roots. Thus the lichen lives by the activity of the roots of the fungi, which really feed upon the rock, slowly changing it into fertile soil, into which the mighty tree may send its roots and obtain the necessary nourishment. The whole universe, therefore, is like a large laboratory in which chemical processes are performed unceasingly.\*

#### *MOISTURE IN THE AIR.*

An important component of the air is water in the form of vapor, the amount of which varies according to the atmospheric conditions, seasons, localities, etc. This is of much significance to us, because our lungs throw off moisture as well as

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\* See Richard Meyer, in "Das werken der chemischen Kraft in der Natur."



carbonic acid, and moisture escapes through the pores of the skin; and there is a much greater loss of moisture from the body in dry than in moist air. The skin is cooled by evaporation, as we can see by putting up a moist finger to find which way the wind comes. A strong draft upon the body when it is moist is dangerous by cooling it too suddenly, when no harm would result if the body were dry. Warm air will hold more moisture than cold air, and its circulation facilitates absorption. Our linens dry more quickly out of doors than in the house; and if the wind blows the drying is quickened. The air never misses finding moisture wherever it is; and nature is concerned with the smallest amount as well as with the larger supply from oceans, seas, lakes, rivers and forests.

What becomes of all this moisture in the air? It is absorbed by the air until no more can be held, when the least fall of temperature causes condensation, and the particles come down as fog, rain, snow or hail. Clouds are fog high above us, and fog is cloud on the earth. If we were to climb to the top of a mountain enveloped in



cloud we should find ourselves in a dense fog. If we should happen to be on a mountain top when there is a lower strata of cool air, and also sufficient moisture, we might witness the phenomena of finding ourselves above the clouds in bright sunshine, while beneath us a thunder-storm is raging and the rain is falling. We know that our breath contains moisture which we do not see in warm air; but when the air is cold, we see the exhaled moisture as a flying cloud from our mouths. The same thing occurs in the atmosphere. When a stratum of air filled with water meets a colder stratum the moisture becomes fog, or clouds, as they are called, in the sky. If a warmer and drier stratum of air meets with the stratum of which the clouds have formed, it will absorb the moisture of the lower stratum, and threatening clouds will disappear. We frequently notice, especially in mountainous districts, in summer, that week after week the clouds gather and disappear. Mountains and forests also absorb moisture from the air, and so help to dissipate the clouds. When the air is fully saturated with moisture, and is met by cold air, this moisture



condenses into tiny drops which the air can no longer carry; then these drops fall, enlarging as they pass through the moist air, and we have rain. If this condensed moisture meets a very cold stratum of air the drops freeze, and in the same manner—enlarging as they fall—become snow. In a similar way, assisted by electricity, we have hail.

*SNOW-STORM IN A CONCERT HALL.*

Professor Dove relates how a miniature snow-storm formed in a hall in St. Petersburg. The cold was severe, and the hall over-heated and crowded with people. The air became insufferable, so that several persons fainted. The windows could not be opened as they were frozen down. An officer broke a window-pane with his sword. The cold air rushed in, and a miniature snow-storm from the moisture in the air of the hall was the result. The moisture exhaled by the people had risen to the top of the hall, and was condensed by the icy air into tiny snow-flakes.

Not only the breaths, but the heat emanating from the bodies of a great number of people in



a limited space, pollute the air and renders it unendurable. The atmosphere is seldom, and only for a short time, saturated with moisture; ordinarily it contains only a fraction of the amount which it would take up at a given temperature.

#### *THE FORESTS.*

Woods protect the drying and heating effects of the sun, and this regulating influence is of great value to us, especially in preventing the generation and spread of epidemic diseases. The summer will not be as hot, nor the winter as cold, in thickly-wooded countries as in places sparsely wooded. Woods also preserve our water courses. The cutting down of forests is often carried to excess, and so becomes injurious to health. It also invites floods, because the quantity of rain cannot be absorbed without the aid of the forests; and the fallen foliage of the trees holds the moisture and prevents violent floods.

#### *EXPANSION OF THE AIR BY HEAT.*

Air possesses, like all bodies, the capacity for expansion when it becomes warm. The expanded warm air is lighter than the dense cold air, and



will, therefore, rise. For this reason high rooms are difficult to heat. The warm air rises to the ceiling and the floor remains cold. Our warmly clad feet will be colder than our bare faces. If we go up a ladder in a cool room we shall at once see how much warmer it is above. The flies know this very well, and keep to the top of the room when it is cold.

It is the same with the earth's atmosphere. The sun warms the air continually at the equator, and as it rises cooler air from the north and from the south rushes in to fill its place. The cooler air is again warmed, and so the equator and the poles are constantly supplying each other and producing wind-storms by this interchange, and also, to a certain extent, warming the cold regions and cooling the warm ones.

The change of these regular winds is caused by the rotation of the earth, which revolves every twenty-four hours from west to east around its axis, carrying with it the surrounding atmosphere. During this revolution, parts which are nearer the equator move much quicker than those which are near to the pole. The air on the other side,



which streams below from the pole to the equator, is passing continually over that part of the earth which moves faster towards the east than the air moves; while the upper air, which comes from the equator, is still moving with the same velocity which it had at the equator, streaming towards the poles over tracks which are moving with less velocity.

From this arise the trade winds which are so important to navigation. The trade winds move in our hemisphere, in the lower stratum of air from north-east, and in the higher stratum from the south-west. In the southern hemisphere, however, the trade winds move in the lower stratum of air, from the south-east, and in the higher stratum from the north-west.

Sunshine and wind and the condition of the air constitute weather, which is so important to us.

#### *EVAPORATION.*

We have seen the process of evaporation in our clothes hanging in the warm air and wind, and how the water in the oceans, in rivers and lakes is absorbed and taken up into the atmosphere



and becomes cloud, and also how it is condensed by cold and again falls to the earth in rain, snow or hail.

When water evaporates, *i.e.*, when its components change into gas or vapor, heat is required, and this heat is supplied by the surrounding air, which is thereby cooled. When water boils, the heat of the fuel changes the water into vapor, which occurs at  $212^{\circ}$  F., and we have exactly this amount of heat less for warming the room, or for other purposes. Heat becomes latent by the evaporation of the water. When the vapor is condensed to water through cooling, the heat will become free again.

In the same way, the earth cools where vapors are forming, and we get less heat from the sun because the heat has become latent. In summer, during a shower, it is often more oppressive than before; but afterwards the air is cooler because, as before, evaporation has made the heat latent. But if the moisture in the atmosphere changes into rain then the heat is again released.

In countries where there is much water, the summers are cooler because the heat is kept la-



tent by the constant evaporation. In winter, however, these countries are warmer because so much vapor is changed into water, thus freeing the heat. This is the case in Great Britain, which is surrounded by the ocean, and has, therefore, warmer winters and cooler summers than we have on the continent.

The woods, in summer, are cooler, not only because we are protected from the sun by the roof of leaves, but because the moist leaves absorb the heat. But in the evening this heat is again set free, and it is warmer in the woods than out of them. The air absorbs the heat and forms vapor, which precipitates at night in the form of dew and gives us such freshness in the morning. Dew, rain and wind are direct purifiers of the air, and cleanse it of those injurious substances mixed up with it.

### *THE SUN.*

The sun, in both summer and winter, provides warmth and coolness, wind and dew, without which neither plant nor animal could exist. The sun also gives us light, which is as necessary to



health as the air is. If plants grow without sufficient light they will not have the fresh green so pleasing to our eyes, but only a sickly yellowish white. Animals that can live in caverns and subterraneous water, such as lizards and a low class of fish, have no eyes and are colorless. The mole living underground has no use for eyes, and comes to the surface only for the oxygen which is deficient in ground air.

We can see the effect of sunlight and warmth on the vegetation of the tropics and the arctic regions. As we go north, its growth is less abundant and, finally, no trees are found, and but small shrubbery, and algæ and moss grow in the place of grass. In our temperate climate we are refreshed by woods and blooming gardens, although we have winter one-third of the year. Even farther north, where summer is only six weeks long, the little vegetation that is able to survive the long, severe winter springs into life like magic, and mosses produce bright blossoms in a few days of warm sunshine.



*THE TROPICS.*

In the tropical regions nature revels in blossom, foliage and colors. What are grown in pots in hot-houses, as small plants, in our temperate climate, are shrubs or trees, or vines covering the walks. Roses, charming as they are here with their beauty and perfume when carefully cultivated, spring up everywhere, naturally, in a warmer climate. They grow on the ground as borders of flower-beds; they stretch their luxuriant branches into trees laden with oranges or with lemons. They climb, intermixed with heliotrope, upon the walls, and the perfume is almost intoxicating. Here nature allows herself only a few weeks of rest. The leaves and blossoms are hardly gone when young leaves and blossoms spring forth, and in a few days bushes and trees are covered with variegated brilliancy. Spring is there with overpowering splendor. In presence of this wonderful creative power of Nature, man bows in humility and rapture.

How invigorating, too, is this spring-time renewing upon our minds and spirits. We long to go out from our winter confinement into the open air.



where our lungs can breathe more and our blood circulate freely. The Americans even prescribe sun baths, which they believe to have great healing power. With the head covered, they expose the limbs only slightly covered, to the hot, life-giving sunbeams. They also protect face and hands less from the sun than we do, believing it is healthful to expose these to the healing power of the sun.

#### *SUNSHINE IN OUR HOUSES.*

When we see the creative and renewing force of the sunshine, we must naturally conclude that it is of the greatest importance that the windows of our houses should admit all the sunlight possible, instead of excluding it with blinds, curtains and shades. There is no doubt that much sickness and suffering result from the custom of excluding so much sunshine and fresh air from our homes.

Unwholesome and disease-breeding dampness on floors and walls is evaporated by sunbeams into the air which the sunshine has warmed. We cannot admit too much sunshine and air to our rooms. The absence of sunlight in city dwellings, and the darkness and dampness of yard- and cellar-dwell-



ings (these latter are prohibited by the police in Berlin), produce pale, sickly men and women and weakly children with swollen glands and rickety, worn old faces.

Without the invigorating influence of sunlight, the energy of mind and spirit weakens, and all forces of life deteriorate. We see children enjoy their frolics in the sunshine, rolling merrily in the sun-heated sand, and putting their hands and feet into it with sheer delight. They have not lost, through conventional life, their affinity for the life-giving forces of nature.

#### *THE SOIL UNDER HOUSES.*

We have seen how important it is to admit an abundance of air and sunlight into our houses if we would have them healthful; but the air not only surrounds us and our house, it penetrates the soil on which the house is built, and from there into the inner and outer walls and floors, and then passes into the air of the rooms. It is, therefore, important that the ground on which we build our houses should have been subjected to this purification by the direct rays of the sun.



An unwholesome condition of the soil causes various diseases and epidemics. Miasmatic, that is disease-bearing, vapors rise from the soil and mix with the water of wells and aquaducts, as it is impossible to have pipes absolutely tight. These injurious vapors rise mostly from decomposition of organic substances in the soil, and are imparted to it by waste-pipes, by ash- and swill-vats, as well as through pits containing excrement.\* The decomposition of organic substances is promoted by the warmth and moisture of the soil, which is more or less penetrable to air and water, as its minutest particles are not packed closely together, but contain everywhere smaller or larger gaps or spaces.

#### *UNDERGROUND WATER.*

Underground water has also a great influence on hygiene. Rain water is disposed of partly by flowing to the lower levels of the ground, partly by evaporation and partly by being absorbed into the ground. The condition of the surface of the soil, its cover of vegetation, and particularly of

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\*See "Dangers to Health," Chap. II.



forests, has a great influence upon the process of draining and of evaporation of the water.

The water which is neither drained from the surface nor evaporated into the air, sinks, more or less quickly into the soil until it reaches strata which contain clay or consist of rock offering resistance to its further passage. Upon these strata water is found at greater or less depths under the porous surface of the soil. This water collects, forming, according to the conditions, subterranean lakes or streams of various dimensions. This water is called underground water if the spaces in the soil are completely filled with water and the air is driven out; but if the gaps in the porous soil are only partly filled with water and partly with air, we call it a damp soil.

Other collections of underground water depend upon the course of the watertight stratum upon which it is located. Underground lakes form in its cavities. Where the foundation forms an inclined plane, it flows in a slow or more rapid stream to the deepest level of the declivity. Generally the impervious stratum declines towards the river basins, therefore the water flows with more or less



rapidity towards the river, so that every water-course acts as a drain-pipe upon a territory at whose deepest level its bed lies.

This explains why variations in the water-level of a river correspond to the fluctuations in the condition of the underground water near its banks. The flowing of the underground water is stopped by the rise of the river.

Besides the moving of the underground water towards the river, there is also a rise and fall of the water at the same spot. These fluctuations depend upon atmospheric precipitations, which at different times sink into the ground to a greater depth. They are the only sources of the collections of water in the ground as well as of the water flowing down the substratum on which the water collects. Rain does not always cause a rise at the spot where it falls. In higher localities of a basin rain will produce underground water in lower localities. The fluctuations of underground water vary considerably, but are of great importance for the moisture of the strata lying above, as well as for those chemical processes which are going on within them for the promotion of organic life.



*LOWEST FORMS OF LIFE.*

The lowest forms of fungi, to which are ascribed such an important part in causing epidemic diseases, belong to those living organisms whose birth and multiplication are promoted by alternate dampness and dryness of the ground; and the conditions which are favorable to their growth are unfavorable to higher forms of life, either animal or vegetable.

Wood subjected to alternate moisture and dryness will soon decay, but will remain unchanged for centuries if it is kept continually under water, as is seen in the remains of the old bridges built by the Romans. Neither will wood decay if kept perfectly dry, as the wooden coffins in the Egyptian pyramids show. Only when wood fibers are alternately moist and dry will they quickly decompose.

Just the same takes place in the ground. As long as the upper stratum is filled with water, the decomposition of the organic matter contained in the soil and the action of the lower organisms connected with it will go on slowly, but will take place with great energy as soon as the ground begins to dry; the underground water sinks, and



the air penetrates the strata which were inaccessible to the air while filled with water.

Careful observation has shown that, in many instances, an outbreak of typhoid fever and cholera epidemics correspond with the sinking of underground water, *i. e.*, with the diminishing moisture of the upper stratum of the ground; while at the time of high water underground there were no epidemics. It is also remarkable that these epidemics are not found in places located on very dry ground.

According to observations made in England, these diseases are less prevalent where the soil is kept clean, and guarded from changes in the underground moisture by drainage.

Intermittent fever also originates under similar conditions, and, therefore, appears principally in low and swampy districts.

All these diseases are imparted to man almost exclusively by impure air and water. Impurities in the soil communicate constantly with the atmosphere; and especially does the warm air of the house become contaminated with any impurity in the cellar, or in the soil under or around the house.



This occurs particularly in winter, when the heated house acts like a fire-place upon the air in the ground, drawing it upward into the house.

#### *CHANGES OF CLIMATE.*

Culture of the soil changes the climate of the locality and acts beneficially upon the health of the people. A soil covered with primeval forests and swamps is an unhealthful one. Such localities are unwholesome because they are damp in the cooler climates, and full of miasmatic vapors in the warmer ones. It is by cutting down superfluous forests that the swamps are dried up, the rivers are regulated, and the climate becomes drier and healthier. This has been done in the countries of middle Europe. We know from Roman writers that Germany, now so fertile, was rough and sterile in earlier times. On the contrary, the lack of proper cultivation of the soil in the Campagna has changed the former fertile fields into a malarial region, where dangerous fevers prevail.

The purity of the ground, as well as its dryness, is a matter of great importance, as we have already shown. The system of sewerage in Berlin



has done much to purify the soil, and the result is a diminishing of epidemics; and this will be more noticeable when the work is completed.

Cesspools are generally filters for the decaying and disease-breeding substances which they contain, and which percolate into the ground.

Soil made from the deposit of all sorts of rubbish, offal and dirt from the street, is very unwholesome to build upon.

#### *WASTE FROM FACTORIES.*

The waste from factories, particularly where chemicals are used, not only infect the water of the brooks and rivers in the vicinity, but pollute the ground which absorbs it.

The decomposition of organic matter in cemeteries contaminates the surrounding soil, and products of putrefaction are imparted to the atmosphere and to the water of the vicinity. For this reason cremation is receiving much attention, and with our rapidly increasing population seems the only way of disposing of the dead with safety to the living.\*

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\*Erismann Gesundheitslehre "Der Boden."



Whatever is of importance in our homes is also important in the school, in which so many children are kept together during the day, and where the products of body waste and evaporation are so great.

Hospitals also require pure air and sunshine and perfect cleanliness, not only of the patient, but of the surroundings. These will do more for the recovery of the patient than the medicine he receives.

Again we must emphasize the necessity of a plentiful supply of pure water, not only for drinking, but for all uses. This is one of the first requirements of health. We must remember that water forms a great part of our nourishment, and that our homes cannot be hygienic unless pure water *only* is used in our kitchens, our laundries and for all out-door purposes. Pure spring water is best. It should be colorless, odorless, and of a pleasant, refreshing taste. If it is slightly hard it is better for drinking; but for cooking, washing and bathing, soft water is preferable. Where perfectly pure water cannot be had a filter should always be used. All water that is impure, whether used for kitchen and laundry purposes, or for



sprinkling lawns and streets, leaves this impurity on the ground, to become dry, and, in the form of dust, fill the air and so breed disease. Dry sand ought not to be used in cuspidores, as germs of infection may rise from it into the air. Water is far safer.



### CHAPTER III.

#### THE INFANT DURING THE FIRST FEW WEEKS OF LIFE.

WE have now reached the most important point in our consideration of hygiene—its application to the physical and mental development of the child.

The advice given in previous chapters applies equally to the welfare of the child and the adult; for conditions injurious to mature life are doubly injurious to the infant, whose delicate body needs the most favorable conditions for its preservation and development. Its power of resistance is too light to battle with unfavorable surroundings or improper nourishment. According to the best authorities, one fifth of the infants die during the first year.

It is a work requiring education and culture to adequately care for the infant. The duty of protecting and guiding the newly awakened life, and



watching and assisting its development is a sacred one. The first essential in the care of the child is its nourishment. Any indiscretion in feeding the new-born infant may sow the seeds of life-long mischief. The nursing by the mother herself is the greatest guarantee for health to the child, for this is nature's provision, and no substitute can fill its place. The composition of the mother's milk is such that, however closely it may be copied, chemically, it is never equaled in its effect upon the child, providing, of course, that the mother is healthy.

#### *THE CHILD'S FIRST CRY.*

Our interest and care for the child must begin with the first cry announcing a new life. This is not a cry of pain, but rather an indication of vigor—nature's provision for inflating the lungs with the life-giving oxygen; but to the parents it brings emotions of joy and gratitude to God. Loving arms embrace the helpless creature, and all unite in services to the little being so mysteriously endowed with life. No animal is so helpless at birth, and so dependent upon help and care, as little



children; and this helplessness and necessity for care seems to awaken the tenderest love in our heart, so that all we can do for the child is a willing, joyous service.

### *THE FIRST BATH.*

The first bath should be thorough, but carefully and judiciously given, so that the skin may at once be in a condition to perform its part in the respiratory service of the body. If the water or room is too cold, or the bathing too prolonged, and not done with gentleness, it may cause much harm. The temperature of the bath should be 95° F.

### *THE ROOM.*

The room of confinement, in which mother and child must spend several weeks, should be large and well ventilated. Fresh air may be admitted constantly to replace that which is as constantly being vitiated. The recovery of strength by the mother and the well-being of the child will greatly depend upon the freshness of the room. Even if the room is small the windows can be opened frequently, covering mother and child so as to avoid



a direct draft. Even very young infants are made fretful and wakeful by want of fresh air, and will be quieted if taken into another room where the air is pure. The child must not have its face covered in bed; but mouth and nose are to be left free for breathing.

The best room in the house ought always to be taken for confinement, and, indeed, for any sickness, as it usually can be most easily ventilated and affords the greatest tranquility; and pure air and quiet surroundings are of first importance in any illness.

The utmost cleanliness should be observed in this room. Everything soiled should at once be taken from it, and all the soiled napkins put in cold water for the time being, and washed daily and dried in the open air; and all linen thoroughly dried before being taken to the sick-chamber.

Burning various things in the sick-room to improve the air is a mistake, as it only exchanges one bad smell for another, at best; neither can the air be improved hygienically by perfumery, though a pleasant odor may be more agreeable than a disagreeable one. The introduction of



pure, and the removal of impure, air can alone keep the air wholesome.

Darkness in the room of confinement is also a mistake. The full daylight may be softened so as to accustom the eyes of the new-born infant gradually to the light; but from the moment of birth the eye is organized to receive light, which, like air, is indispensable to the health of the infant, and, if introduced with discretion, can do no harm.

#### *THE BED.*

The bed of the infant may be of horsehair or seaweed, and wedge-shaped; neither bed nor pillow should be of feathers. The head must not be kept too warm nor too high, and the covering ought to be a light down quilt or a soft woollen blanket; and if the feet are not perfectly warm, a bottle of warm water may be kept at them.

It is never quite safe to use the common earthen bottle with cork stopper, because the cork is liable to fly out and the infant get wet, if not scalded. If such a bottle is used, it is safer to fill it with hot sand, and cork it tightly. The



warming-bottle should always be well wrapped up, so as to keep the direct heat from the child.

The mattress may be covered with a rubber sheet to keep it from soiling; it ought to be well brushed and aired daily, and, if possible, used only at night, while the child sleeps in its carriage during the day, moved to the most quiet and airy room.

#### *ROCKING.*

Do not rock the child—a habit which is soon formed and not easily overcome. The rocking motion disturbs digestion and excites the brain, and may have a serious effect if some illness comes on the child, which naturally increases with the rocking. Children, like adults, get more refreshing sleep when perfect quiet is secured.

Heat, draft and dazzling light ought to be carefully avoided for the child. The bed should be so arranged that the light comes from behind the head, and also surrounded with a muslin curtain, not too close to it, but near enough to be a protection from insects as well as from drafts. The right temperature for the nursery is about



66° F., but may vary a little with circumstances. It should not go below that.

#### *FIRST DRESS.*

The first dress must be warm, soft and loose. A soft linen or cotton shirt, covered with a loose jacket, not too short, which can be wrapped around the body, are sufficient covering. Later, the body may be wrapped in a band of soft flannel, and a compress of soft linen placed on the navel. A napkin of soft linen or cotton should enclose the little legs, and this covered with warm flannel. A thick pad of folds of cotton flannel may be put under the body; over these put a flannel skirt with sleeveless waist and long enough to allow for pinning up over the feet. Then the cambric dress or slip with high neck and long sleeves. Or, to save too much dressing for the first few days, a loose flannel nightgown is recommended. It can be made very prettily by feather-stitching, and open in the back and have a loose belt around the waist. All clothing should be slightly warmed before putting it on. The arms and feet must be unconfined by the dress. Every-



thing about the dress should be fastened with buttons or strings, and no pin allowed either in its clothing or about the nurse. A cap is unnecessary, except when going out. No close band about the body is allowable, unless the navel protrudes so as to require it.

### *SLEEP.*

See that the child, from the beginning, sleeps on its side, and not on its back. This is a protection against choking if milk is thrown up while sleeping,

When the infant is put to the breast for the first time, it often requires much patience and self-restraint on the part of the mother.

The child should be put directly back into its crib after nursing, as its education has now really begun; and what is done once or twice at the beginning will, unconsciously, be expected later on. The baby, even when awake, enjoys lying quietly in the crib or carriage at play; and this is much better for strengthening its back than to be held much, and mother and nurse are thus relieved. When the baby is old enough, it is well to lay it



on a rug on the floor, providing it is warm and there are no drafts, so that it may have perfect freedom of its limbs without danger of falling.

If the child has not been too carefully guarded from noise, so as to be unduly sensitive, a little will not disturb it unless it is very sudden; but all sudden noises or movements should be avoided, especially on its waking from sleep. Disturbed sleep and sudden awakening often lay the foundation for future nervous excitement and sensitiveness, if not actual disease. Therefore let the sleeping hours be judiciously guarded.

#### *CARE OF THE MOUTH.*

It is very important that the baby's mouth be very carefully washed with a cloth wet in fresh, pure water before and after eating. Even at night, or if the baby falls asleep at the breast, it should not be omitted. The baby will soon get used to this and not be disturbed by it. Gums, tongue and roof of the mouth, and surface of the jaws and cheeks must be carefully cleaned from the milk, which would become sour there and produce unhealthful conditions, inviting disease of



the mouth, stomach and intestines. Twenty minutes' nursing is sufficient time for the infant to obtain all it needs, and if it seems not to do this, some condition is not quite right.

The baby must not be allowed to go with wet napkins, and should be washed with clean water whenever these are changed: thus chafing of the skin will be avoided. After three months the baby may be put on its chair every hour. In this way a habit of cleanliness will be gradually secured.

Emotions of grief, disappointment and anger act injuriously upon the milk, and the mother or wet nurse should avoid these for the sake of the child; but if these emotions do occur, do not immediately put the baby to the breast, and when it is ready to nurse, draw away the first milk before the child is allowed to suck. Even if no immediate effect is seen, harm is necessarily done which may later take on many forms.

#### *MOTHER'S FOOD, NURSING, ETC.*

We have already spoken of the changes which go on in the body, and the building it up by nourishment. The mother's milk, if abundant,



supplies everything which the child needs for its growth, and the renewing of the body in all its parts. Through nature's perfect and mysterious adjustment, part of the food which the mother takes into her stomach is transformed into milk which contains all the materials of which the human body is composed. If this palatable and easily-digested food lacked only one of the substances which build up the bones and the brain, and produce healthy blood to form the skin, hair, nails, muscular tissue, fat, sinews, nerves and veins, the infant could not develop normally, but would be imperfect in some part of its structure.

Tissue changes in the body begin with the first breath. Elimination of waste material and the building up of these wasted cells from nourishment received from food, drink and air is the process of life, whether in the infant or the adult.

The nourishment we get from the air, we take in through the lungs and the skin; that which comes from food, through the mouth. The secretions or waste material are eliminated through the lungs and skin, and the more material part of it through the intestines and bladder.



A few hints about the food of the mother for the first few weeks after confinement may be helpful. Fennel tea with milk is serviceable for the first few days, and after that weak coffee or tea with much milk, and thin gruel and flour and milk gruels. She may also eat, with her drinks, a little well-toasted bread or "zweiback."

From the fourth day she may have for dinner a soup of veal, or pigeon or chicken broth, slightly salted, with a little of the meat, with which may be boiled a little sago or farina; but the diet should be very largely of milk gruels and liquid foods.

On the sixth day mashed potatoes or a little stewed fruit may be added to the dinner. Light vegetables in small proportions may be given the second week; not, however, without having been boiled with a pinch of bicarbonate of soda.

After the ninth day the usual diet may be taken up again, with few exceptions, unless special conditions make a change necessary, in which case the physician will prescribe.

It is the duty of the doctor who is called in case of confinement to see that the baby is normal, and



that the mother's health is such as will justify her in nursing it.

Improper nourishment, colds and other indispositions of the mother react upon the baby. She should, therefore, keep breasts, abdomen and feet warm, and take more than ordinary care in keeping up a high degree of health.

When the baby nurses at night, it should not be kept in the mother's bed, but put back into its crib after its hunger is satisfied. It is better, every way, for the child, and prevents any possibility of its being smothered or of falling out of bed.

The baby ought to be nursed as little as possible during the night: after a few weeks it will be sufficient if the baby nurses at ten o'clock in the evening and at five in the morning. A little perseverance will establish the habit. If it is at the cost of a few uneasy nights the mother is rewarded by regular and refreshing sleep for herself and child through the months of infancy, and perhaps for life. Regular habits and long intervals between nursing, giving rest to the stomach, as well as quiet sleep at night, are essential to its welfare.



The infant's brain is in constant activity from contact with life through its senses, even during the first year, and quiet, abundant sleep to recuperate from this activity is as necessary to health as is wholesome food; and the more active a child is, the more it will need sleep.\* A child will be more likely to get a habit of restlessness from irregularity in its hours of sleep, than to sleep soundly, because it has had the regular hours so interfered with that it needs the rest.

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\*Uffelmann, "Hygiene des Kinder."



## CHAPTER IV.

### USE OF THE NURSING BOTTLE TO SUPPLEMENT THE MOTHER'S MILK.

THE child, if sufficiently nourished by the mother's milk, will need nothing else for the first few months; but if the mother is not strong, or has not enough milk, the nursing bottle must be used. When this supplementary food is needed—and the necessity for it will be indicated by the condition of the child—it should be given at regular times, once, twice or three times a day, between nursing at the breast.

#### *BOTTLE AND UTENSILS.*

A bottle with measuring lines for showing the amount, and proportions of mixing, and a dark rubber nipple make the best substitute for the breast, and perfect cleanliness must be observed.

The utensils necessary for use with the bottle—and these should never be used for anything



else—are, a little boiler in which to prepare the milk, a small, fine sieve, two small china pitchers, two rubber nipples, a little salt cellar, a thermometer, a spirit lamp, and a knitted woolen bottle cover.

*COWS' MILK.*

Pure milk is the first requisite, and great care should be given to its selection, so as to be sure of milk from a healthy, well-fed cow; it should be brought twice a day. The milk if good will have a yellow tint; but if it is of a blue tint it is not the right kind. As soon as the milk is cooled after milking, it must be boiled for twenty minutes. The cover put on the pan to prevent boiling over is a convenience. The milk pan should be rinsed with water just before using. After boiling the milk, pour into a china pitcher and cover lightly with sanitary cotton, which may be had of the druggist, and set in a cool place or in a pan of cold water, and cleanse the milk-pan at once. For diluting the milk, pour one quart of boiling water over a teaspoonful of fennel. Let the tea stand, covered, for three minutes; then



pour through a clean sieve into an earthen jug and cover this, also, with the sanitary cotton. The cotton will protect the tea and the milk from bacilli and germs, as well as from dust.

The first month mix well two tablespoonfuls of milk with six tablespoonfuls of the fennel tea, a pinch of salt, and as much powdered sugar as a knife point will hold. After two months, equal parts of the tea and milk may be given to a healthy child. The milk is never to be re-heated by the lamp, but strained through the sieve into the bottle and the hot tea poured in to warm it. Put on the rubber nipple and screw it over the top of the bottle and shake well. The temperature of the milk should not be less than 95° F., and can be kept at this heat by a knitted woolen cover on the bottle.

When the baby is taking its food let it lie in its carriage or crib. Do not talk to it nor divert its attention from its food. Keep the bottle in a position to prevent the baby from sucking air with the milk, and see that the nipple does not get sucked together. Whenever it does this, it must be taken off and adjusted. Always get the best



rubber nipples; they are the cheapest in the end because they last longer. Avoid the gray ones as they contain more lead than the darker ones. Cover the nipple inside and out with coarse salt and rub sharply between the palms of the hands, then rinse and dry. Do this every time after using. The pricking of the hole in the end requires some skill. A fine wire hair-pin, heated, will make the right-sized hole for young infants; but later the hole must be larger. The child must not swallow too quickly; and if the hole becomes too large, substitute a nipple that is right.

Bottle and nipple, as well as everything used, should be thoroughly cleaned after each meal. When the bottle is not in use, always keep it full of pure water and closed with a glass stopper. Every morning give everything a thorough cleansing with salt or with sand. Everything should have its place and be used for the child only.\* Bottles which have the mouth-piece connected with a glass tube by a rubber tube are very convenient for taking the milk; but the difficulty of cleansing these tubes is a great objection to their use.

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\*“Zur Belehrung über die Pflege von Säuglingen,” von H. Heyl.



We cannot too urgently advise, even more with the bottle than with the mother's milk, that the mouth be carefully washed before and after feeding, to prevent the fermentation of the particles of milk which are left in it.

#### *THE SUCKING-BAG.*

The sucking-bag and rubber nipple which are still used by some mothers to keep the baby quiet are very objectionable. The sucking-bag (a bag filled with bread soaked in milk) produces acid in the child's mouth, bringing on thrush, catarrh of the stomach and intestines, and by causing indigestion may produce that dreaded disease, rickets.

#### *THE WET NURSE.*

If the mother is prevented by ill-health or an insufficient supply milk from nursing her baby, a healthy wet nurse is, of course, the best substitute, especially in large cities, and if the baby is feeble. The physician should examine and select the nurse, and see that all her conditions are right. He should also prescribe the diet for the wet nurse; for if she has been accustomed to work



and to plain food, a sudden change to too luxurious living will make her milk too fat and indigestible. Besides, it will react on her disposition, and she will become imperious, capricious and quarrelsome, and so exert an undesirable moral as well as physical influence upon the child. She should have simple, nutritious food, and a proper amount of out-door exercise.

The objections to having the child sleep with the mother are still greater in case of the nurse.

If a wet nurse cannot be kept, the next best thing is to have a woman come in who, besides nursing her own baby, will nurse another child two or three times each day. The physician must examine this woman, also, and see if she is healthy and her own infant thriving. A weakly baby will thrive much better to alternate this with the bottle than if fed from the bottle entirely.



## CHAPTER V.

### BATHING THE CHILD.

FOR cleanliness the infant requires a bath every morning and evening, and clean linen every morning for the first year. The morning bath may be 93° F., and the evening bath slightly cooler, and gradually the temperature may be lessened with advantage. Wash the mouth carefully after every bath in perfectly fresh, cold water. The bath-tub may be of wood or tin, or a small clean wash-tub will do.

Keep the temperature at 93° during the bath, adding hot water when necessary to keep it up to this point. Never trust the hands to test the water, or anything except a thermometer, as one is easily deceived by their constantly varying temperatures. Close the room in which the child is to be bathed so as to avoid drafts, and keep it closed while undressing, bathing and dressing.

Have all the needed things ready before the bath begins, even the wash-cloths well soaped ready



for use, and the clean water and separate soft napkins for washing and wiping the eyes and mouth.

Undress the child on a large flat pillow covered with a blanket and napkin.

#### *HOW TO BATHE.*

When putting the baby in the bath, hold it with the left hand under the armpit, so as to support the head, and the right hand under the trunk. The left hand supports the baby while the right is free to use. Five or six minutes are long enough to keep the baby in the bath for a few months; but the time may be prolonged as it grows older.

It is a very good way to pin the blanket and napkin around the nurse or mother, in which to wrap the child, so that no air may come to its little wet body. Use a second drying napkin, so that the skin may be thoroughly dried. Every wrinkle or fold in the skin must be smoothed out and dried perfectly. If a child is faithfully cared for in this respect it will rarely have soreness of the neck, armpits or ears.

When the upper part of the body is dry, put on shirt and jacket, and smooth out and dry the



wrinkles in the rest of the body. If an eruption or anything unusual appears on the body, show it to your physician at once. It may be a trifle, but do not risk increasing the trouble by delay.

The temperature of the bath may be less as the child grows older, until the water is quite cold, and the sponge may be filled with cold water and dripped upon the head of the child as preparation for the cold pouring bath later. The cooler morning and evening bath strengthens nerves, bones and muscles, prevents colds and establishes the habit of cleanliness.

If the head shows an eruption or dry skin, which is rarely the case if the prescribed care has been taken, rub it gently with olive oil at night and wash it off with delicate soap and water in the morning. Do not listen to the superstition that the rash protects the fontanel. This must grow together by enlarging as the skin on the head grows, and will be helped to do so by cleanliness and pure air.

#### *SPONGES NOT RECOMMENDED.*

Sponges are not recommended because bacteria, bacilli and other injurious germs are retained in



their pores and are not easily removed. A piece of loose cotton makes a good substitute for a sponge. Have these pieces of cotton ready and kept closely covered in a tin box, and when used throw them away. But if sponge or cloth is used, they should be washed and dried each time after use, and washed daily with warm water and soda.

Surrounded as we are by the air, we live, in a sense, in an air bath. An exchange is constantly taking place between this air and the gases and fluids of our bodies. The porous quality of the skin and all the membranes offers no obstacle to this interchange; and the skin becomes the dumping-ground, so to speak, of all the *débris* from within and without, not able to assimilate either with the air or with the fluids of the body. The perspiration through the pores of the skin carries with it much impurity in the form of salts, acids and fats. The more volatile portions pass into the atmosphere and the residue is left upon the skin. It is for us, therefore, to assist inhalation and exhalation through the pores of the skin by bathing and clean linen, and also by keeping the air about us pure and fresh.



*FUNCTIONS OF THE SKIN.*

We can form an idea of the important office of the skin when we realize that death would result in a short time if two-thirds of it were made impenetrable by a coat of varnish, because only one-third of the necessary expiration could go on.

It sometimes happens that a large piece of skin is removed by the accident of scalding, and death ensues. This is more from the fact that so large a part of the body is without the services of the skin than from any other effect of the burn.

A warm bath cleanses the skin much more effectually than a cold one; and mild soap assists in dissolving the fatty accumulations upon it. The free use, therefore, of warm baths, and the use of soap, will greatly assist in preserving health, as many diseases are brought on by its suppressed activity.

*REFRESHING INFLUENCES OF THE BATH.*

Another refreshing influence of the bath is the pressure of the water upon the body. Being heavier than the air, the pressure of the water on all sides, which keeps the body almost floating in



the water, is more of a rest to the muscles than lying upon a couch, where that part of the body underneath has to carry the weight of that above. In consequence of diffusion, thirst is allayed by a bath in clean water; and by means of a bath the body can take in nourishing and stimulating fluids. Whatever bath is taken, water will always enter through the skin into the body, or be excreted, through the same channel, from the blood. Thus the skin becomes invigorated and elastic, and its vital activity and energy are increased.

But there is still a further effect of a bath. It acts not only on the skin, but reacts upon blood and nerves, and so upon the whole body. The warm bath will produce an agreeable sensation of warmth after the slight chill by the exposure of undressing. This warmth is partly caused by the heat of the water and partly because the body is giving off less heat. This increases the vital activity. The blood flows more freely from the heart; the skin reddens as the thin veins in it fill abundantly; the exchange with the water is more rapid; but the congestion of the blood in the surface of the body will produce a decrease of blood



in the organs, bringing a refreshing sense of coolness and rest.

The warm bath refreshes and invigorates; but the cold bath is still more invigorating to those whose vitality will allow its use, and is an excellent remedy for nervous weakness for men or women, and it is an encouraging sign that swimming-schools for the young are becoming common.\*

These directions for bathing have their exceptions, and no one should take cold baths who is unable to get up the reaction necessary for beneficial results; and if one is not strong, the physician should be consulted in regard to the baths. What is beneficial for one may harm another; a tepid bath may be all that some persons can bear.

Infants need bathing more frequently than grown people, because the changes going on in their systems is greater, and the process of excretion is much more active.

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\* "Victoria Bibliothek für die Frauen des deutschen Volks," herausgegeben von Bertha Meyer; Heft 4-5 "Ueber Baeder und deren Wirkung," von A. Bernstein.



## CHAPTER VI.

### REARING WITH THE BOTTLE ALONE.

WHEN the parents or physician have decided that the baby must be brought up artificially, the first thing to try to secure is pure milk; and this is more important now than when the bottle is used to supplement the mother's milk. Perfect cleanliness and regularity are now indispensable. The baby, deprived of its natural food, is exposed to many more dangers than when the mother is able to nurse it.

When pure milk from a healthy, properly-fed cow is secured, it should be brought fresh twice a day. It should be boiled as soon as received, according to directions in Chapter IV. If a cow in the near neighborhood cannot be found to supply the milk, recourse may be had to dealers who furnish milk in sealed cans. This is often very good, and the child will soon show by its condition whether it is suitable or not.



*ARRANGEMENTS FOR MILK IN BERLIN.*

Even a scientific examination of the milk will not always show whether the cow is healthy and well nourished or otherwise. In the Royal Veterinary Academy at Berlin, among other appointments is a stock of fifteen or twenty milch cows of various breeds. The milk is retailed to the public morning, noon and evening. This institution is the seat of the highest authority in veterinary science, and a guarantee of the perfect sanitary treatment of the cows, and offers an invaluable opportunity for those living near enough to get this milk. Similar arrangements should be furnished in other cities. An object lesson of the highest value would thus be offered in regard to the sanitary treatment of milch cows and the milk they furnish after it has been drawn.

Again we must warn mothers against milk from cows fed on swill or waste of any kind; and it is important that they and their stables, and the milker, be kept clean, as filth from the cow or her surroundings will get into the milk. To test the cleanliness of the milk, put it into a glass bottle and let it stand for several hours. If not clean,



the particles of dust and foreign matter will settle at the bottom.

The most common adulteration of milk is the addition of water, which gives it a bluish color by lessening the per centage of fat; but as its specific weight decreases in the same proportion, milk-scales and the cream measure will detect its presence.

Lactic acid fermentation is chiefly produced by a kind of fungus, which Dr. Hueppe, after years of study, has definitely traced; and as much of the sickness of children is due to fermentation by this bacilli, sterilization becomes important.

Bacilli are microscopic plants in the air, and fermentation of the milk from these can only be prevented by thorough boiling or by keeping it in hermetically sealed cans. Milk in larger quantity should be kept as cool as possible, because at low temperature this plant cannot exist, while a moderate heat favors its growth.

The smallest residue of milk which has become sour contains so much of this product of fermentation that every particle of fresh milk coming in contact with it will also become sour in a short



time. Therefore, as before stated, too much care cannot be used in cleansing the bottle and every vessel used for milk for the infant. Even the smallest quantity of lactic acid will injure the digestion of the child, and may result in serious consequences.

Milk should never be re-warmed, if for any reason what has been prepared has not been used. Freshly-prepared milk should be given at each meal.

#### *CHEMICAL COMBINATION WITH METALS.*

Lactic acid enters easily into combination with most metals, notably with lead, copper and zinc, forming, with them, salts which are extremely poisonous. Vessels of these metals are therefore unfit for holding milk. Wooden or glass vessels are recommended, as earthen- or ironware may contain lead in the enamel.

#### *FOOD AND DISEASE.*

With proper nourishing, most of the diseases of infancy may be prevented.

All that has been said in Chapter IV. about the food of infants, proportions of mixing, etc., must



be even more minutely observed when only artificial food is given. The proportions of two table-spoonfuls of milk to six of fennel tea should, after two weeks, be increased in favor of the milk, a half a spoonful more every two or three weeks, according to the condition of the child, till the tenth or eleventh month, after which pure milk may be given. The condition of the child will always indicate whether there is perfect nourishment or not. This is also seen in the gain in weight and length.

During the first two or three days after birth there is generally a decrease in weight, as the impurities in the body must first be got rid of, and the amount of nourishment from the mother is small; so that the child's original weight is not reached till from the seventh to the tenth day. The average weight of new-born infants is from six and a half to seven and a half pounds. The daily increase is greatest during the first month, counting from the time of beginning to gain, averaging daily one ounce. This average will decrease steadily until it amounts to only one quarter of an



ounce daily. Children fed from the breast generally gain more than those artificially fed.

The weighing must be carefully attended to in order to be of any use in determining the condition of the child. Ordinary household scales may be used. Whatever garments the baby has on must be carefully weighed and deducted, as all guessing is sure to be misleading. An observing mother will recognize, without weighing, the gain or loss of vigor in her baby; and if weighing becomes the established test, an anxious mother may be injured by any loss of weight which, after all, may be a harmless one or a mistake; and so, while the physician may sometimes require accurate data, to be obtained only by weighing, it can not be generally recommended.

#### *THE EXCRETA.*

Careful observation of the infant's napkins, to see if the food is properly digested, is important as evidence of its condition; and if a baby is not thriving it will be indicated in its appearance.

The bowels of nurselings should move two or three times daily, and the movements be of a



salve-like consistency and have a slightly sour smell. If the excreta are too hard, the milk must be diluted, and the same if the child is sick, until the physician comes and gives directions.

In hot weather it is very difficult to keep milk from souring. If acidity is suspected, a piece of litmus paper dipped in it will be made red if lactic acid fermentation has begun. Then let the house and cellar be examined, for a small piece of decayed vegetable may breed much impurity. If no refuse is found, and all precautions of cleanliness have been observed, and the acidity continues, or the child's napkins show a curdy quality, put a teaspoonful of lime water into the milk when it is boiling. This will neutralize the acid or remove its effect.

In some cases milk in any form seems to disagree with the infant, and when this occurs some other form of nourishment must be given. Sometimes condensed milk will serve when it cannot be taken in any other way. The Swiss condensed milk, in airtight cans, is recommended. Use one tablespoonful of this to ten spoonfuls of fennel tea or boiled water, without sugar, as this is added in



its manufacture. Increase the proportion of milk as the child grows older.

#### *GRUELS.*

Wheat, barley or oatmeal gruel is not to be recommended in early infancy, though useful later. Leibig's soup or Nestlé's meal are better. The former is obtained in the form of powder which, according to directions, is prepared with water and milk. The latter is boiled in water until cooked. No milk is added, as this is one of the constituents of the food. The physician must always be consulted in the choice of food. In using any of these foods it must be remembered that they easily spoil if kept in a damp place or in insufficient wrappers. Buy only such things as come in sealed cans.

The various kinds of food for babies have more or less merit in special cases; but cow's milk is generally the best substitute for the mother's milk, especially in early infancy; and it often appears not to agree with the infant only because all the conditions of cleanliness and proportion for diluting it, which are necessary in artificial feeding, have not been complied with.



## CHAPTER VII.

### THE NURSERY AND THE CHILD'S FURTHER DEVELOPMENT.

THE ancient proverb which Froebel so heartily endorsed, "Only in a sound body dwells a sound mind," should not be forgotten in the nursery. Furnishing, as the latter does, the child's principal environment for many months, it has practically a controlling influence in establishing conditions which later will crystalize into intellectual and physical health, or unbalancing of the body and brain. Everything, therefore, which pertains to infancy, and especially its little world, the nursery, should engage our most serious attention,

#### *CLEANLINESS IN THE NURSERY.*

The first requisite for the nursery is perfect cleanliness, which, of course, includes the air in it. The floor should be washed several times a day, so that the dust which is constantly raised by the frolics of the older children will be disposed of.



The dust always contains more or less bacilli, which are to be avoided when possible, especially for little children. Water, then, used freely, is indispensable in the nursery.

#### PURE AIR.

All that we have said about cleanliness and fresh air for the room of confinement is just as important for the child in the nursery. Fresh air, even at night, must be had. A little opening in the window is always safe, by drawing a curtain across to prevent a direct draft. Children will be less restless in their sleep and will, as well as adults, feel refreshed in the morning if they sleep in peace. This will not be after sleeping in a close room.

Dress the baby in cloak and hat as if going out for a walk, and open the windows wide, as often as possible during the day. *Always* plenty of pure water, and *always* fresh air. What is done now and then is of little value. It is the continual doing that produces the lasting effect. Habit is power; but occasional action makes little impression anywhere.



All vessels for whatever use in the nursery must be kept scrupulously clean. A few drops of muriatic or carbolic acid added to the hot water for the daily cleaning will greatly help in the result.

If it is possible, have a separate nursery for the night, in which the windows can be left open during the day.

Oil paint, which is easily cleaned and will not allow any moisture to penetrate, is the best floor covering. Rugs will protect the child from cold floors. The walls ought to be of blue or light green color, pleasing to the eye. The nursery should be well lighted, because light promotes growth and chemical changes in the body. Under the influence of light more carbonic acid will be eliminated. In dark rooms, the chemical changes go on so slowly that children become pale, chlorotic and scrofulous.

Children eliminate more carbonic acid than adults, and so have greater need of ventilation. The sleeping apartment must, therefore, be roomy and exposed to the light during the daytime. Artificial light contaminates the air. A hanging lamp, which cannot be reached by the children, is



better than gas, but should not be kept burning during the night.

### *LITTLE FURNITURE IN THE NURSERY.*

The nursery must contain but little furniture, so that the children may have enough room left for play without danger of hurting themselves on corners and edges. Baby-chairs, provided with a table, are best placed low on the floor, so that the baby cannot fall out and may play in it comfortably.

When the children get older and have their lessons in the nursery, the table and chair should be made like the school desks. Care should be taken, from the beginning, that the children sit erect and keep their book or slate at a distance of eight inches from the eyes. These precautions will prevent shortsightedness and round shoulders.

Darken the sleeping-room so that sun- and moonlight will not disturb the sleeper. The cot or crib should be open at the sides, to let the air through, and not too small; and two children should never sleep in one bed. Be very watchful of the child's hands, and see that they are kept



from its body, lest bad habits get fixed, unconsciously, upon him.

*NURSE SHOULD BE A KINDERGARTNER.*

The nurse, who should also be a kindergartner, must observe the same cleanliness of her own body and clothing as of the child's; for the air cannot be pure where there is personal uncleanness. The whole body must be washed daily or the emanations from it will vitiate the air. A towel or sponge bath will be sufficient, if no bath tub is at hand, and the refreshing result will more than repay all trouble.

Dust all garments worn during the day, and hang them where they will air at night.

Beds should be aired as long as possible in the morning. Take the sheets off and expose the single pieces to the current of fresh air through the room, or to the direct rays of the sun. Only in this way will they become fresh and free from the eliminations of the body.

*INTERNAL CLEANLINESS.*

The nurse should be as assiduous in caring for the cleanliness of the inside of the body as for the



outside. She should see that no constipation arises either with the child or herself. The discharges from the bowels must not only be daily, but sufficient in quantity and not too hard. Properly-selected, moderately-taken meals and exercise daily in the open air, will usually prevent all trouble of this kind. Should constipation occur, then apply light remedies before it becomes serious, for constipation is the source of numberless evils, and especially to diseases peculiar to girls. Licorice powder is an excellent remedy.

*All* the functions of the bowels must be observed with care, and the lower part of the body kept scrupulously clean. Only in this way can it be kept healthy.

#### *CREEPING.*

Now the baby is developed in size and strength ; knows the mother and nurse, and stretches its little hands towards them in intelligent recognition. The constant effort to use feet as well as hands suggests more freedom for the feet. No exact date can be given for putting short clothes on the baby ; but while urging the child to creep or



walk is harmful, its own instincts to these activities should be promptly and carefully obeyed. Holding the baby in the lap, or carrying it more than is necessary, is objectionable. To lie on a mattress or rug on the floor is far better in every way. There it has ample room, and is in no danger of falling; besides, there is, we are sure, a sense of freedom for it to follow its natural impulses to activity that have a direct bearing upon character. The children of the Indians and Malays, who are not, like our children, hindered by their covering, walk, as a rule, at six months old. Therefore, short clothes should be worn as soon as there is evidence that the long clothes are a hindrance to the movement of the limbs, and then the feet must be dressed in warm stockings and soft, comfortable shoes.

Fasten everything with buttons, and tie no tapes around the body. Even if these are loose when tied, they are liable to get pulled and tightened across the stomach and crowd this organ and make breathing more difficult. Have the weight of the skirts rest upon the shoulders, and everything loose. Neck and arms may be left bare;



they, like the face, will get used to the air and feel no discomfort.

Garters must not be fastened around the legs, as they prevent the free circulation of the blood; fasten the stockings by elastic straps to the waist.

Have the dress a little warmer in winter than in summer, but not too warm, as this will weaken the reactive power of the body; but protect the body from sudden changes of temperature.

#### *BREATHING THROUGH THE NOSE.*

We must always keep in mind, in dealing with the young child, that habits of every kind started now are for life; and one of the most important habits for the health of the body is that of breathing through the nose, as nature has provided this organ for warming and cleansing the air before it passes into the lungs. The little bones in the cavity, and the fine hairs which surround the nostrils, make the entrance of air more difficult, and also prevent the entrance of bacilli and other injurious substances into the body.

Breathing through the open mouth dries the throat and produces harsh breathing; the tonsils



swell and become inflamed, and if long continued become so much enlarged as to form an obstacle to breathing and swallowing. The tubes which lead from the larynx to the nose become charged by non-use; a dry coryza will be formed in time, and we can only speak through the nose, as if with a severe cold. The voice is made unmusical, the air passages will be injured and the way opened for diseases of the lungs.

Another tube leads from each side of the throat to the ear. This one also gets stopped up. when the tonsils are swollen and the larynx is inflamed; hearing becomes less acute and, later, deafness is very likely to result.

We avert these dangers if the mouth is kept closed in breathing.

It is said of the wild Indian tribes, that the mothers watch their children during sleep; that they keep their lips shut, and though they are always exposed, malarial diseases are unknown.

#### *VACCINATION.*

Vaccination should be attended to in the fourth or fifth month, unless it brings it in very cold



weather. It is better to wait longer, unless small-pox prevails, so that waiting becomes hazardous. The earlier it can be done the sooner will the baby be protected against this very dangerous disease, and the less will be the danger of rubbing the eruption and producing scars or interfering with teething. The vaccination must be left to the physician, who can be trusted to use healthy lymph, and who will watch the child through the operation. Its condition during this time is not sickness, and the baby can be bathed, and in summer be sent out into the open air nearly as usual. On the seventh or eighth day the child may be feverish, and the place of vaccination be inflamed and much swollen. In this case, cover with a cloth dipped in olive oil.

#### *TEETHING.*

Teething, which, with different children sets in at different ages, after the first half year, is also not a disease. It is the natural process of development, during which the body is in increased activity, which makes it more susceptible to out-



ward influences, and any disturbance, especially of the brain, may result seriously.

This period therefore requires increased attention to the daily functions of the body. Watch any tendency to congestion of the brain which may result if the child is over-fed or constipated. In the latter case use an enema of pure, tepid water. Have the tube of the syringe washed off with five per cent. carbolic acid and, after wiping carefully, well oiled.

A rash while teething, or a slight diarrhea, sometimes diverts the irritation from the gums and gives relief, but they must be watched over by the physician. These may come from milk that is too rich, or from some disturbance of the mother's milk or that of the wet nurse, and will be cured by a change of food. There may, however, be more serious results, especially if the diarrhea occurs during hot weather; therefore the physician should be consulted.

Plain food should be the rule in all cases, and sweets, pastry and fat dishes must always be avoided for children of all ages.

The first teeth to come are generally the in-



scissors; then the forward double teeth; afterward the eye-teeth and, finally, the molars. Variations will, of course, happen. The difficulties of teething differ very much, according to the constitution and condition of the child. Sometimes a violet-root or a ring of rubber or bone to bite and rub the gums with is helpful. Some babies get their teeth early and in quick succession with little trouble. Others get them very slowly with the same ease; others, again, suffer much from pain and irritation, which may last for months before the teeth cut through. Sometimes several teeth start at once and produce such an excitement that convulsions follow. If teething is very difficult, a little cut into the gums with a lance is sometimes beneficial, and is advised by the physician. Many mothers who bring up their little ones hygienically find the irritation from teething much less than when they are brought up without regard to hygienic law.

The period of teething lasts up to the third year, and children are, during this time, often sulky, sensitive and obstinate. These conditions should be treated more with patient, loving care



than with severity: and if this patience is accompanied with firmness and tact severity will be unnecessary.

*OTHER FOOD THAN MILK.*

After the twentieth week the baby may have, besides milk, such farinaceous food as "infant's food," farina, or milk porridge made thin enough to take through the bottle.

Weaning is easier if the baby gets used to other food first, and it should not be done suddenly; it is better if it can be accomplished between the sixth and tenth months. Too long nursing is sometimes injurious to both mother and baby; but the hot months are not favorable for weaning. Special attention should be given to the effect of the new food upon the digestive organs. Vomiting or diarrhea are evidence that the nourishment given does not suit, and if these appear, consult a physician at once. A continued diarrhea, though slight, may be a symptom of catarrh of the bowels or incipient stage of cholera infantum, both of which are so fatal to children during hot weather.

A good menu for the baby of two years is the



following: At seven or eight o'clock in the morning, milk soup; at ten o'clock, white bread with a little butter and a soft boiled egg, or a raw egg with sugar; at twelve or one o'clock, broth with a little meat, meal or some preparation of egg, or light vegetables; at three or four, milk and white bread; at seven, milk soup.

Raw, scraped beef or mutton of best quality, and without fat, serve an excellent purpose. Other kinds of meat may contain the eggs which produce the tapeworm. Roast beef, chicken and pigeon give only well minced. Mashed potato with much milk may be given; but milk should still be the principal food.

#### *CARE OF THE MOUTH AND TEETH.*

Before and after meals always have the little hands and face washed, and also the mouth and teeth. The teeth can be preserved only by cleanliness, and the healthy condition of the teeth reacts upon digestion. Thorough chewing of the food is also necessary to good digestion, and should be insisted upon from the beginning. Do not permit the mouth to be filled too full. Tidy,



quiet manners should be required from the baby; and with the older children no excuse should be allowed for the neglect of these.

Soup and drinks must be taken noiselessly, and the knife used only for cutting the food.

If the child shows decided aversion to any article of food, accustom it to its use gradually, so as to overcome so inconvenient a habit; but should this prove unsuccessful, do not compel it to eat.

With all good habits, the educator must set the example. Children are keen observers; and if they see that parents and those that have the care of them do not practice what is required of them, they will be more likely to follow their example than their precept.



## CHAPTER VIII.

### ÆSTHETICS IN THE NURSERY.

THE child, if early accustomed to cleanliness and fresh air, will feel the need of them when it is older, and will choose to play in the garden, field and woods, and will be likely to be fond of flowers and grasses, with trees and sand and stones; in short, will enjoy all natural activities and works. Its inclination to occupy itself can easily be directed to the watering and nursing of flowers and plants, and also to the feeding of and caring for animals in the manner Froebel has so beautifully directed. Its teacher will also cultivate the sense of beauty in the child, not only by Froebel's Occupations, but by decorating the walls and windows of the room with grasses and flowers, so that impressions of beauty once awakened will be continually renewed and deepened by self-activity; and this is character-building.



*NURSERY AND KINDERGARTEN.*

If the educator has a love of beauty, it is easy for her to make the nursery or kindergarten attractive. The plainest weeds will make a pretty wreath or bouquet, or be used singly as a decoration on mirror or picture. Fir branches give a healthful odor and also decoration. All these seeming trifles are useful to the child, and are moral factors in its life which will always be an ever-present resource by offering endless means of enjoyment, which, without this early training, would remain entirely unnoticed.

Branches of trees and shrubs which put forth early in spring, placed in lukewarm water, in the house, give great delight to the children by unfolding their buds and leaves in advance of outdoor growth. Common cress and linseed planted in a plate filled with earth will soon spring up in the warm room, and show a miniature field of green. Or a wine bottle wrapped in brown paper and kept wet, sprinkled with the same seeds, will, in a few days, become a pyramid of green.

Growing plants in a room invigorate the lungs, as has been explained in a previous chapter.



The resources of the nursery should be enlarged for the child, by specimens from garden, field and wood, and free scope here be allowed for play or experiment with flowers, herbs, stones and everything from nature's inexhaustible store-house.

The educator, who is fortunate enough to be a kindergartner also, knows how many inspirations the children will bring home with them from their outdoor rambles—questions and suggestions about natural objects that call for endless resources on her part.

#### *FROLICS.*

No better tonic for the voice or development of the chest organs can be had than frolicking out of doors.

The varied abilities of children are, in the nursery, spread before the observant and annointed eye; and it is here, if ever, that the seeds in the child's soul can be nursed or checked. The greatest art in education consists in cultivating the good to the displacement of the evil or undesirable growth.

#### *LIBERTY.*

The largest liberty in the nursery, as in the unrestrained intercourse with nature, develops the



natural faculties of the mind and heart. This is seen in the natural relations of children in the kindergarten; an empire where children exhibit their individuality; their yielding or their dominating disposition; their generosity or selfishness; their sense of justice, their egotism or their independence. Here their powers are tried and measured; it is a miniature state, where, in a small degree, commensurate with this undeveloped condition, the after-life is enacted.

Here, too, begins the harmonious development of the powers of the body and mind, for which the Greeks, in the education of their youth, serve as an admirable example of strengthening the mind through the body. As a result of this education, at an early age many of them became eminent statesmen, and kept their incomparable powers of mind to old age. Plato and Pythagoras continued to teach and write till past the eightieth year, and Isocrates was still an illustrious speaker in his ninety-fourth year.

Children learn, in a well-ordered nursery, to occupy themselves. Idleness, the mother of all mischief, finds no admittance here. We know that



orderly activity, here as in the kindergarten, is the great character-building force. So in the nursery, as in its sister institution, the kindergarten, organized activity of body is necessary to the harmonious development of the whole being.

#### *THE LEFT HAND.*

It is important for full development, that the left hand should be educated the same as the right. We all suffer from the awkwardness of the left hand, which arises from want of early training. Always encourage, rather than hinder, the use of the left hand, for thus we acquire valuable and ever-increasing power, which reacts upon the brain force.

This ambidexterity is also of hygienic importance. By the activity of both sides of the body equal circulation of blood is promoted, and the left as well as the right side of the brain and the lungs are invigorated and nourished; and this, in our age of nervous strain and poor blood, is surely an important factor. We cannot doubt but our capacities of both body and brain are much increased when both halves are equally developed.



Prof. Finkelnburg directed children who had enlargement of the right shoulder, caused by writing, to use the left hand exclusively in writing, drawing and needlework, and was rewarded by seeing the difficulty entirely removed. This shows the importance of beginning with children the training of the left hand equally with the right, thus avoiding this one-sided growth of the body.

A harmonious education must be based upon physical strength and physical training, and combine with it intelligence and a pure, sympathetic heart, which includes not only human beings, but animals and plants.

#### *JUSTICE.*

If the sense of justice is to be taught to the child, then first do justice to it by trying to find out its peculiarities, and do not ask of it blind obedience when we are not sure that our demands are not opposed to the child's nature. For instance, do not compel it to receive attention from every stranger. We may not allow incivility to any one—friend or stranger; but a child objects to undue familiarity from a stranger as an adult



would, and has not learned to express its objections politely. If the child needs correction, send it to its room, but without anger. Its obedience should be the outcome of loving respect. Physical health seldom admits of ill-humor, and will help towards obedience.

Demand blind obedience only in things which the child cannot understand, or which will expose it to danger: and, above all, be consistent in all demands and discipline. In this way you will gain obedience as the most beautiful fruit of love; and the habit of respect will become an ornament inseparable from it for life.

Answer lovingly the questions of children, referring with sympathetic kindness such things as are beyond their understanding to an age when they can be understood.

#### *SIMPLICITY.*

Simplicity is the soul of wisdom in dealing with children. Simple food which must not, however, lack nutrition and variety; simple toys and dress are best. Teach them to make the most of simple things and they will not be dependent upon



affluence in after life for their happiness, but will care more for intellectual ability and moral worth.

No toy is valuable to a child, as educating it, unless it is something which it can relate to its life, or live with in some way. Self-activity alone gives value to possession, and at the same time educates the child.

The kindergarten methods of organized activity should prevail in the family. The senses should be carefully cultivated by lively games; and this cultivation will serve through life by making us confident, even in the dark, because we trust the combined evidence of our senses. We are all more or less victims of fear and anxiety, which disappear when all the senses intelligently unite to protect and inform the body.

#### *TRAINING THE SENSES.*

This confidence, which the proper training of all the senses gives, acts favorably on the health by calming the nerves and giving more restful sleep and better digestion.

The unrest that comes from untrained senses has a paralyzing effect on the mind and makes it



timid and unable to work naturally or to overcome obstacles.

Rousseau, in his "Emile," gives excellent advice about exercising the senses of the child, and how to execute lively games with great enthusiasm of the children in darkened rooms. Such exercises must strengthen and fortify both body and mind.

For educational and decorative effects, mottoes and proverbs which adapt and impress themselves upon the child's understanding may be hung upon the walls of the room, examples of which are here given :

"When tasks are over for the day,  
Then is the time for sport and play."

"He tastes the sweetest cup of bliss,  
Who kind and good to others is."

"Gold sunbeams bright  
All hearts delight."

"Thou shalt, like sunbeams clear and bright,  
Be good, sweet, merry, kind and bright."

"By no means to your neighbor do  
What you would not have done to you."



*USEFULNESS.*

There is hardly a more important point in the education of children, or one more frequently overlooked, than that of teaching unselfishness, and these mottoes, attractive and silent, suggest loving thoughts for others, which is so natural in children that it needs but little encouragement.

A child will cheerfully attend to the various little wants of the father or mother which it can understand. For instance, put the daily paper for the father at his place at the table; have his slippers ready when he comes home; lay a cushion down for mother's chair or feet. These attentions afford delight to the child, and may be extended indefinitely and increasingly with the years and understanding of the child. Pictures which are sacred to the parents may be decorated—little gifts made by the busy fingers. A nice note bidding good night to the mother when she is out; laying a bunch of flowers at her place at table before she comes in.

The educator's interest in these little secrets and offices will have great influence for good, and she can get and keep these little confidences by a



sympathetic heart. A kind word, a timely gift, will secure the good will of the little ones more than any amount of care and service bestowed upon them in a less loving way. This attitude will help to deepen the effect of a slight reproof, when such is necessary. Anything which makes her a partner in their interests, such as uniting with them in a gift to a friend or some needy person; or the secret of some forgiven wrong, binds the child still closer to her and increases her influence over it.

Anything which is a lesson to the child, to think of and care for others, and not place itself as the centre of the family interest—the principal receiver instead of one of the givers—helps to counteract the tendency to selfishness which parental care and tenderness foster in the child who is not made a partner in these rights and services.

The physical and mental welfare of our children must be our first care, and it requires wise and loving foresight to so order our solicitude that they will not feel that they are the centre around which the family interests revolve.

Parents and educators must realize that these



little lives, so bound up with theirs, are valuable to themselves and to the world only so far as they are truly good and noble. And this nobility of character must be the result of right training, just as truly as a healthy body and well-balanced mind are the result of cultivation.

Activity, then, in all the amenities and kindly offices to parents and members of the family and to playmates is the surest way to lead children to a habit of right-feeling and right-acting. Parents and educators who cannot lead children sympathetically to this loving activity will leave their work but half finished, and the lives of the children given into their hands will be liable to fail in being a blessing to them or to the world.

#### *PERSONAL APPEARANCE.*

We have spoken of the wholesome effect of artistic surroundings in the nursery; and it is as important that the personal appearance of the educator makes a pleasing impression upon the children under her care. Simplicity and harmony of color and style of dress cultivate artistic perceptions in the child, and strengthen the effects of



educational methods. Valuable and needed impressions are often lost upon the child by untidy dress or some arrangement of it which offends the natural, though unconscious, sense of beauty or fitness. Such things are obstacles to respect. Even adults are impressed by appearances; and how much more will children be affected, who have not yet learned that they may be misleading. We cannot call such things trifles when they can and do interfere with the best interests of education.

Appearance and reality must go together to complete educational effect. Dress ought to be the true expression of the character, and receive intelligent attention as to its artistic qualities.

The ideal and the practical must help each other if we would have our service such as will benefit both the receiver and the giver.



## CHAPTER IX.

### FURTHER DEVELOPMENT OF THE HEALTHY CHILD.

WE have seen that health is of the first importance to the child, and in order to secure it we must insist upon regular habits by day and by night, and see that they are not broken up as the child grows older. Breathing is the first requisite. We have, therefore, to adopt for the child such a dress as will leave this function unrestricted, and see that good air is always furnished in and out of doors; exercise that will expand the lungs is also necessary.

Froebel's Movement-Plays, with directions given in his Mother's Songs, for the development of the limbs, for the training of the senses (eye and ear) in infancy, are known to most educators, and if we follow them thoughtfully and within proper limits we shall secure the best physical development.



*THOUGHTLESS EXPOSURE.*

Important as fresh air is, we must, however, be judicious, especially in cool weather, about letting very young children play in the open air. The larynx, the bronchial tubes and lungs are not yet strong enough to bear sudden changes, and we ought especially to guard children from too much exposure during teething, and to north and east winds in winter and spring. Care must be observed in taking them out when pleasant, and choosing places for them to play not too much exposed to drafts, and where the sun warms the air and ground.

*POSITION IN LYING.*

Pay great attention to the position of the infant during the first six months. Its spine is still weak, and it must, therefore, be kept and carried mostly in a lying position. The spine can easily be injured by carrying it too much upon the arm or upright. Frequent change of attitude should be made; but lying in the carriage is, as a rule, the best position. Never compel the infant to sit, stand or walk before it shows a desire for it; but



put it on the floor as formerly stated. Too early standing and walking causes bow legs. Development of the muscles requires regular exercise, which will increase their size and strength gradually, and give control of the whole body.

### *RECREATIONS.*

Muscular activity, gymnastics, running, jumping, swimming, playing, etc., when the child becomes of proper age, increases the action of the lungs, the heart and the skin, and promotes digestion. Calisthenic movements connected with games are the best exercises in childhood, and, indeed, through the school age, and afford the most complete relaxation from the study and close confinement of the schoolroom.

Physical exercise should be taken out of doors, when possible, where the pure air and freer actions of the lungs can give the best results. This exercise must not be confined to the one hour of gymnastic lesson, but every lesson should be shortened by a quarter of an hour, and the children sent out of doors to frolic while the schoolroom is aired. This muscular activity for a few



minutes increases the circulation of the blood and stimulates breathing; the brain, invigorated by these, is renewed and rendered capable of more and better work; the eyes, relieved of the strain, are rested and strengthened, and the shortening of the school hours results in more work. Miss Edwards, M. D., says: "The work of the brain requires just as much nourishment in the five hours as physical labor requires in ten hours."

#### *GYMNASTICS—LIGHT SUPPERS.*

Gymnastics and all other exercises must be adapted to the age and strength of the child, and alternate with relaxation. A gymnastic costume is necessary for girls, with wide drawers gathered below the knee, a waist or wide blouse and short skirt, to give perfect freedom of movement. If exercise and recreation alternate in proper proportions, and the child gets plenty of sleep, there is little danger of the nervousness so common in children.

Do not allow hearty suppers to be taken, as both sleep and digestion will be disturbed by a full stomach. The evening meal should be simple



and light, and taken at least three-quarters of an hour before bedtime.

Put the children in their nightgowns for their day naps, so that breathing and the circulation of the blood are not hindered and the body not overheated. If the child's sleep is uneasy, so that it throws off the clothing, let it wear combination night-drawers. During summer these should close over the feet to protect them from flies and mosquitoes; or enclose the bed in a netting.

#### *HYGIENIC EDUCATION.*

Hygienic education should cover the sleeping hours of the child, and thereby prevent the formation of bad habits, which may result seriously. The habit of wetting the bed should be attended to as early as possible. As soon as the infant is old enough, the mother should take it up before going to bed, and, if necessary, in the night, too; it will soon get accustomed to this regularity. Baths and nutritious food help to regulate the discharge from the bladder as from the bowels. Avoid giving drink before bedtime, and if, in spite of these precautions, the wetting of the bed continues, the physician should be consulted.



The habit of sucking the fingers should be broken up as soon as possible. It is said that this habit makes, or indicates, good children; but this is an error. It is liable to be followed by serious consequences and lead to worse habits, which destroy the health and causes epilepsy. Too much care cannot, therefore, be given to children when going to bed and when waking. Teach them to keep the hands outside the bed-cover; and never let two children sleep in one bed, as this doubles the danger of bad habits. Keep the body not too warm, and encourage lively play out of bed on waking, if nobody is likely to be disturbed by it. These frolics help to keep body and soul pure and healthy.

The eyes of children need to be cared for from birth, both as a matter of health for them and for cultivation. Out door exercise strengthens the eyes; but aside from physical culture they must be trained to see correctly. Froebel advises that objects which move and which are striking in appearance should be hung by the carriage or cradle; because the child can learn to observe and compare only objects which have been first



impressed upon the retina: and this impression must be made, not by seeing the object once, but by repetition. Therefore, what the eye of the child rests upon often during the unconcious age is easily learned after its conscious age begins. Froebel recommends suspending colored balls by a string before the baby, one color at a time, thus developing the eye and also the sense of color.

The ears and sense of hearing must be developed in the same way, by sounds, especially by the mother's songs.

*FROEBEL'S KINDERGARTEN GAMES.*

Froebel's Movement Games and Occupations, the observing of objects in field, meadow and wood; the bird songs, the rustling leaves and rippling water also help to cultivate the sense of color, of hearing and of form, and with these the sense of the beautiful is necessarily developed.

The sense of feeling will become very accurate by practice. Children enjoy testing this sense by being blindfolded and allowed to handle and describe flowers, leaves and anything at hand by their weight, smell, shape and other characteris-



tics. Rousseau's "Emile" is again referred to as giving valuable suggestions in regard to educating the senses.

### *THE SENSES.*

It is only through the senses that the mind receives impressions of the physical world, and if these are highly developed the children will be likely to protect themselves from many unhygienic and inartistic conditions. They will not, without protest, be subjected to offensive smells, impure air, unsightly rooms and dress, and so will become agents for wholesome surroundings and better ways of living.

We should demand for schools everywhere what most of them in Berlin afford: that they stand upon healthful soil, have sufficient ventilation and sewerage and are not over-crowded; and that the seats be adapted to the various heights of the children, and so placed as to have sufficient, but not direct or cross lights.

### *BATHS IN SCHOOLS.*

Bath-rooms have been added to the school-houses in Göttingen and some other places. The



furnishing of these was the only way in which cleanliness of the body could be secured for the masses of children in the public schools.

The difficulty of ventilating schoolrooms in which children with dirty bodies and clothing are allowed makes the bath-rooms a boon for those who are kept clean at home, as well as those who have not this care there.

The home study should not be so much as to prevent plenty of out-door exercise.

No amount of study from books can compensate for the loss of that harmony of mind and body that can only be produced by the equal development of both and not by overloading one at the expense of the other.

Examination of the pupils should be made a part of the government requirement; but however strict the laws are in regard to hygiene, it will still depend mainly upon the teacher whether these conditions are carried out in the daily life of the school. Children should stand during a part of their recitations, so as to tone up the back and legs from the weariness of their inactive position while sitting.



Knowing the better hygienic conditions for the home and the school, it would seem as if it would be our constant endeavor to secure them, especially when we realize that disturbances of the digestive organs and chlorosis so prevalent among girls might be prevented by these improvements.

#### SCIENTIFIC TRAINING.

We should never forget, that however great the value of scientific or classical education is for boys and girls, that education which will make men and women of them, in the highest sense, can be attained only by that harmony of body and mind which develops character.

While we may doubt how far to give or restrict classical or scientific education, we are at least convinced that *school* work should not begin till after the seventh year, and that the kindergarten, as a preparation for school work will alone lay the proper foundation for complete development. If our elementary schools will follow Froebel's ideas for self-activity of the child, we shall get far better results from the school work.

Teachers are beginning to demand opportunity



for this phase of their work in public schools. They are seeing that the schools should, more than hitherto, embody the freedom of the home, and that the exclusive learning from books should give place to games and physical training. Too great a demand upon the brain produces indifference and dulness; and so over-doing in our mental requirements has the effect of hindering rather than increasing the best development.

Let us hope that the day is dawning when the defects of our school hygiene will be understood and corrected, so that our youth will be able to respond to the increased requirements of culture without losing the freshness and vigor of body and mind which God has ordained.



## CHAPTER X.

### DISEASES OF THE CHILD.

WE have, so far, observed the comparatively healthy child, and if all the demands of health which we have pointed out be carefully observed, and to this care be added a change in summer of a few weeks in the country, mountains or seaside, there will be few diseases among children, and these few will generally be light. This change of air in summer is considered so important that in Berlin the children of poor parents are sent to the country, mountain or seaside for a short time, in summer, by the generosity of Her Majesty the Empress Frederick and other citizens. A similar excellent practice prevails also in many large American cities. Scrofula in its various forms, rachitis and other diseases are often cured in this way. Almost any sacrifice, by people of limited means, to make this change is well rewarded by the improved condition of the children as well as adults.



The temporary freedom from the sights and sounds, the noise and bustle of a great city, is of itself rest and strength; but when, added to this, they get the room and freedom of the country, mountain or sea, which affords God's fresh air in abundance, the lungs are invited to increased activity, and all the forces of the body unite in joyous exhilaration.

#### *CHILDREN'S DISEASES.*

All children are liable to "children's diseases," and in relation to these we must give a few directions. Healthy children are less receptive to these diseases, and when attacked do not suffer so much as less vigorous ones.

We have said in a previous chapter that the first year of life is the most trying one, and that one-fifth of the children die during this period, unable to contend with the unfavorable conditions in which they are placed. The principal preventive of this death-rate is to keep up the vitality, so that there will be power of resistance against all attacks of disease.

Timely aid of a sensible physician is important,



for his assistance is often unavailing, when it would have saved life if called earlier,

### *THE EYES.*

The inflammation of a new-born infant's eyes requires the immediate advice of the physician. It appears with swelling of the eye-lids, which soon become very red and hot, and cannot be opened. Until the physician comes, wash the eyes every fifteen minutes with medicated cotton wet in clean water, and keep them clear of the discharge, as this is poisonous. Wash from the outer to the inner corner of the eye. Use clean cotton each time, and lift the eyelids gently and remove, as far as possible, all discharges from them. The discharge from such diseased eyes is very infectious, and everything that has been used about them must be burned, and the nurse must wash her hands quickly, whenever she has touched the eyes, in carbolic water or sublimate. No other child should be allowed in the room of the sick one. If only one eye is diseased, do not touch the other eye with anything that has, in the slightest degree, been used for the sick one.



Keep the air perfectly pure by constant renewal from outside, without causing draft or too bright light. The danger from this disease may be measured by the fact that more than half of all blindness is caused by neglecting this.

*LUNGS, STOMACH.*

Diseases of the respiratory organs and catarrh of the stomach and intestines are, perhaps, the most serious during the first year.

Previous directions have been given to correct constipation and slight diarrhea. If the diluted milk does not digest, give, instead, water of white of egg, pigeon broth or Biedert's cream (one tablespoonful to fourteen spoonfuls of water). If diarrhea is intermittent, and the discharge watery, pale yellow or streaked with blood; if it is green, smells foul and looks like mixed egg; if vomiting occurs, and you are in doubt as to what to do, call the physician at once; delays may be very hazardous.

Older children are sometimes troubled with catarrh of the stomach and intestines, produced by colds, by habitual cold feet and hasty drinking



of very cold water. The dangers of these things should be impressed upon children, so that they will avoid doing them. If, however, diarrhea appears, put a flannel band around the abdomen. Rub the bowels of very small children with balsam of nutmeg, and for older children use olive oil. Give three times daily a teaspoonful of tincture of rhubarb until the physician comes.

The diseases of the respiratory organs are also caused by colds, from sudden change of temperature, too light clothing, or exposure to raw north and east winds. Children are, in this respect, undoubtedly more sensitive than adults. When the heated, perspiring body is suddenly exposed to cold or draft, the cooled blood flows to and fills the inner organs, thus producing, besides the above-mentioned disturbances, cold in the head, cough, inflammation of the larynx and bronchial tubes. These latter are usually accompanied by high fever. In the beginning of these diseases, light home and hygienic remedies may be applied and warmer clothing added. Every mother should make herself familiar with all the best hygienic ways of managing children.



*THROAT.*

For sore throat, gargle with five per cent. solution of acetate of alumina (half a teaspoonful to a tumbler of tepid water). The same acetate of alumina is also applied externally on medicated cotton. This remedy is excellent for sores and swellings, and is even given by physicians in cases of incipient blood poisoning. In hoarseness and cough apply Priesnitz's cold bandage around the neck, and if this does not relieve, use one of hot water. Drinking freely of hot water for cough is an excellent remedy; just as effective as sweet teas, and does not, like them, disorder the stomach.

Influenza, or grippe, prevalent these few years past, begins like common cold; it is too serious in its after-results to be treated with home remedies. A physician is safer.

*MOUTH.*

Any trouble with the throat must not be neglected. Look in the child's mouth, and if it is red or shows a white coating, examine it at once. Hold the child so that the light will come into its face; press the tongue down with the handle of a



teaspoon, and if it is old enough have it say *Ah*, which exposes the tonsils and throat. Throat diseases develop quickly, especially with little children—like a thief in the night. Sometimes there is a white coating before there is any pain. When this appears, call a physician without delay, but do not be inactive. Gargle the throat at short intervals with chloride of potash and salt in water, or with five per cent. acetate of alumina, and apply promptly an ice-cold compress. It is well to keep in the house, ready for fomentations, flannel binders, with a piece of felting fastened to them. Two binders should be used for these fomentations, one being kept ready when the other is removed. They should be renewed every five minutes.

Croup, false croup and diphtheria are among the most dreaded enemies of childhood, and develop so rapidly that remedies must be applied at once to be of service.

With diphtheria there are other disagreeable things to be done, and a habit of obedience on the part of the child to what is required may be the one influence that will save the child's life; as the



effect of resistance upon the nervous system may be just that additional waste of strength which, added to the disease, will prevent recovery.

It is important to investigate and understand, as far as possible, the causes of disorders of the respiratory organs. In a previous chapter we explained how too warm or moist an atmosphere will develop bacilli and other injurious germs. If rooms are kept at too high a temperature these diseases are invited. The greatest danger, however, comes from polluted air; it may be from dust or gases from imperfect sewerage. Milk containing bacilli can cause these diseases. We refer again to the book already recommended by L. Kridgin Teale.

#### *DIPHTHERIA.*

As soon as a child shows signs of diphtheria, take it immediately to a large, airy room, from which carpets and draperies, as well as all unnecessary clothing and furniture, have been removed. No intercourse, except with the nurse, should be allowed; and it is well if all members of the household not needed go away. Wet a



sheet several times a day with a solution of five per cent. of carbolic acid, and hang it outside the door of the sick room. The other children of the family must not go to school.

The more fresh air drawn through the sick-room the less will be the danger of contagion. Open the windows of the room as much as the season will allow, and leave doors and windows open as much as possible all over the house.

Every article of ware used in the sick-room must be put for an hour into a solution of carbolic acid or boiling water; the physician will give directions in regard to disinfecting, which must be rigidly followed.

After the termination of this dreadful disease everything used about the patient or in the room must be disinfected. The board of health in all large cities will attend to this when notified by the physician. Those living in the country will have no difficulty in doing the same for themselves. It is of the greatest importance that the nurse co-operate perfectly, because the poison will adhere for a long time to all contaminated objects and is very contagious.



*CROUP.*

Croup is often as dangerous as diphtheria, and even false croup sometimes proves very serious.

Croup generally comes suddenly and in the night, and the sharp, whistling sound and hoarse cough are not difficult to recognize. Send at once for a physician, one who understands something of hygiene, and meanwhile let the child inhale, through a sponge, hot vapor of camomile, and give some of the tea of this or lime blossoms, or warm milk with sugar. Put a Priesnitz fomentation round the neck, renewing every hour, and induce slight perspiration, if possible. If the child is constipated, give an enema of three-fourths water and one-fourth vinegar, which, if not successful at first, may be repeated every hour until it is. If the air in the room is dry, set pans of water in it to generate moisture. The rest must be left with the physician.

If the child is better in the morning, it must not go out of doors, be the air ever so fine and sunny; it is better if it stays in bed, for the disease often returns unexpectedly in an aggravated form the following night. This disease prevails



mostly in spring and autumn, and care must be taken to avoid north and east winds.

#### *CONTAGIOUS DISEASES.*

Among the contagious eruptive diseases, such as measles, scarletina, etc., scarlet fever is the most dangerous and also most liable to be followed by diseases of the kidneys, dropsy, throat trouble and diphtheria, also ear trouble, which often leaves partial or entire deafness.\* These diseases do not appear suddenly, but announce themselves by indisposition: Scarlet fever by nausea, vomiting, headache and fever; measles, by cold in the head, cough, weakness of the limbs, aching of the head and eyes. Call the physician and neglect nothing when these symptoms appear. Examine the chest and other parts of the body for the eruptions—bright scarlet spots in the former, and smaller spots in measles. Measles are apt to leave the eyes weak, therefore protect them from too much light.

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\* We cannot forbear warning parents and teachers never to strike children on the ear. The sensitive ear-drum is not adapted to such sudden concussion, and there is always danger in this mode of punishment.



These diseases are epidemic, and vary much in severity in different years; but a child may be very sick in a time when, as a rule, the disease is light.

#### *DISINFECTION.*

Precautions of quarantine and disinfecting are to be always observed in all contagious skin diseases, as in diphtheria.

Sanitary supervision of kindergartens and schools is very important.

The sick child must be kept in bed, covered lightly, and all body and bed linen changed often. Put the soiled linen at once into boiling water or a five per cent. solution of carbolic acid, or sublimate solution one part, water, 2,000 parts; thoroughly wash in boiling water and strong soap.

Treat all discharges and secretions of the patient by a quantity of five per cent. solution of carbolic acid, or the sublimate solution, or other suitable disinfectant, and, after stirring well, bury them. All bandages should be burned at once.

Give the child, for drink, pure cold water, and for nourishment, during the fever, milk broth and



gruel. No solid food should be taken till the fever has abated.

The patient must have his own dishes for eating and drinking, and these should be well washed after using, and disinfected by thorough boiling after the sickness is over

Scrupulous cleanliness is of itself a disinfectant. Face and hands must be washed repeatedly, and the whole body be very thoroughly bathed once a day. Clean the mouth and throat several times daily with boracic acid in water, or one per cent. solution of carbolic acid in water. Infection is not only carried by the patient himself; but by every object that has come in contact with him; by dust which is carried to everything in the house, and by the animals of the house. The nurse should, if possible, have had the disease, and, after every service which involves contact with the patient, the hands should be washed in a five per cent. solution of carbolic acid and water, which should be kept ready for use. The mouth and throat should be rinsed often.

Food should not be eaten in the sick-room, and when leaving it change the outer garment and



brush faithfully hair and beard with a brush moistened with five per cent. solution of carbolic acid.

After the termination of the disease, bathe the whole body with warm water and soap, and have the linen soaked and washed as directed above.

In measles and scarlet fever there is danger of contagion till the scaling of the skin is quite complete: with diphtheria, until all traces of coating have disappeared from the throat. The last thing before leaving the room should be a very thorough bath and entire change of linen. The child should go out among its fellows as clean from head to foot, internally and externally, as modern hygienic science can make it.

Chicken-pox is a light disease, but is also contagious, and the physician should be called in for it.

Considerably worse than chicken-pox are the rash and diseases which follow vaccination with impure lymph or unclean instruments. Parents can keep their own lancet for vaccination, and it should be kept scrupulously clean.

Impure lymph causes many disagreeable consequences, so that vaccination should be entrusted only to conscientious physicians.



All these diseases, and even vaccination, are frequently accompanied with fever in their later stages, and this should be treated directly. The indications are: Heat in the head and abdomen, red cheeks, quickened pulse and breath, restlessness, loss of appetite and great thirst. Cold water can safely be given in small quantities to allay the thirst. All parents should learn the use of a body thermometer, so as to be able to take the temperature and report to the physician when he comes.

#### *CONVULSIONS.*

Convulsions are much to be dreaded, and are produced, usually, by over-feeding, but may also come from other causes. Call the physician at the first symptoms. These are unmistakable, even to an unprofessional eye. The child becomes pale and cold; the limbs convulse or become rigid; the eyes turn; the hands are pressed together, with the thumbs inside. An attack may be fatal if the mother loses her presence of mind.

Before the physician arrives, give a tepid or hot enema, bathe the child in lukewarm water; if the



head is hot, apply every few minutes a compress wet in ice-water. Put oilcloth or rubber under the head.

### *WHOOPING COUGH.*

Whooping cough appears to be epidemic, but it is also caused by inhaling dust particles. The directions as to the care of the nursery will largely prevent this. Have no draperies that cannot be dusted every day. The constant purity of the air in the nursery, and, indeed, all over the house, is the best preventive of this tormenting disease.

Whooping cough may be recognized by coughing spells, and a deep, whistling breath intervening, which is followed by many short, broken, quickly-succeeding coughs, with apparent danger of suffocation. Such an attack often lasts for several minutes, then follows, generally, an interval of hours before a new attack comes on. These attacks may be accompanied with vomiting.

### *AT THE SEA SIDE.*

The greatest benefit comes from abundant fresh air in the house, and going out of doors as much as possible. An entire change of locality will often



effect a cure. In Holland, children with scarlet fever, even, are taken to the beach to lie in the sun, and their recovery is much more rapid. In California, children are sometimes kept during an illness under trees, out of doors, when the weather is suitable. It might be done elsewhere under proper conditions. Even a change to a fresh, clean room has proved very beneficial.

If the child is reduced in strength, use a tepid towel bath daily, gradually reducing the temperature. If the feet are inclined to be cold, a hot foot bath with cool water poured over them after it will be useful. For infants, use a hot water bag and rub with hot flannels. Milk and hot water tend to allay the irritation produced by coughing. The food should consist principally of milk, the juice of stewed fruits and soups made of Graham bread. Sweets are to be wholly avoided. Fomentations around the neck and chest may give relief.

#### *SCROFULA, RICKETS, ETC.*

Scrofula and rickets, if not inherited, can generally be avoided by careful hygienic treatment. The first-named may be the result of whooping



cough or measles, and the strictest attention to the physician's advice is, therefore, recommended. It shows itself by rashes, swelling of glands, inflammation of the eyes, and may result in tubercular consumption.

Rickets can come from too weak a structure of the bones, from deficiency of iron or phosphate of lime in the nourishment, and the physician usually prescribes these as remedies. For both diseases, salt and sea baths and a life in the open air, with sufficient wholesome food, are the best remedies.

Thrush is liable to attack any child, be it healthy or otherwise, and it is an annoying ailment. It appears in the mouth, but spreads frequently to the alimentary canal and lower parts of the body. When little white blisters on tongue or gum are first observed, wash the mouth carefully twenty or thirty times daily, with a cloth dipped in a solution of borax (a teaspoonful to a large tumbler of water), and rub the spots off. Do the same with the lower parts of the body if the spots appear there. Thrush is contagious, and all precautions to prevent spreading to well children must be observed. Be careful that the spoon used for the



child with the thrush is not employed for other children without thorough cleansing.

Mumps, also a contagious and painful disease, appears with swelling of the neck-glands and cheeks. They are usually accompanied with fever. Cotton wet with warm olive oil will give relief if applied to the painful parts. This disease is also very contagious.

#### *IMPORTANCE OF HYGIENE.*

Public attention has been called to the importance of hygiene in institutions and public places, as a matter of necessity and economy. Human life, even the poorest, has a definite value, and there is no wisdom, not to speak of humanity, in neglecting anything that can benefit all the people, more especially those who can not or will not help themselves. A complete change has been made in the city of Berlin, in the streets and buildings, the sewerage and water supply, the making of the streets wide and smooth, and cleaning and watering them, the bathing places, squares, parks and pleasure grounds, offering fresh air and green trees for all. The excellent public schools and



other excellent institutions, were hardly thought of half a century ago. All these we are grateful for, as they indicate increasing culture in the right direction.

In addition to these public improvements are benevolent and charitable societies, kindergartens and nurseries which not only take care of children during the forenoon, but also while the mothers who must earn the family bread, or part of it, are at work, and supply them with good food.

*SOCIETY FOR THE STUDY OF HYGIENE.*

There is a society in Berlin for the study of hygiene, which, under the protection of the benevolent Empress Frederick, takes care of the sick parents as well as children; supplies the sickly, during school time, with milk and eggs; provides water and medical baths at home, and sends those who need it to the country and seaside in summer, and distributes blessings of every kind as far as its means will allow. These institutions and societies are still too few to watch over and feed all the needy children, and teach them useful work at home or in the garden, and afford them physical



and moral protection that will lead to better conditions in life.

Sick children are specially cared for, not only by the city and by private benefactions, but by the hospital, which is a model of comfort and convenience, built by the Emperor and Empress Frederick at the north end of Berlin. There are other city hospitals and pavilions and wards for the reception of children with contagious diseases, with every means to prevent the spread of contagion and for disinfecting purposes.

In addition to these are institutions for the deaf and dumb, also for the blind and all classes of unfortunates.

### *CONCLUSION.*

We have endeavored to point out or indicate helpful and hygienic rules for attaining physical and mental health by educating body and mind harmoniously. We cannot control public institutions, nor even our own surroundings; and our schools are yet far from affording the ideal education; but if we all fill our places to the best of our ability, and do what lies in our power, es-



pecially mothers and educators, who watch over infancy and early childhood, much more may be done in the next few years than in the past.

It is a sacred duty we owe to the future, as well as the past, upon which we build, to devote heart, hands and brain to the welfare of the coming generation.

The endless list of diseases which afflict humanity are traced by thoughtful physicians to seeds sown in infancy by improper nourishment, negligence in directing the functions of certain organs of the body, breathing impure air, the lack of early training of the limbs, by close rooms and the lack of bathing. All these and many other hindrances unfit us for resisting the moral, intellectual and physical limitations of life.

If our physical disabilities are partly hereditary, it is all the more reason why we should organize all our forces to resist their consequences.

Chlorosis, with its manifold effects, indigestion, scrofulous tendencies, which often end in lung troubles and consumption, pelvic and abdominal weaknesses and nervous diseases—all these arise from some weak spot in the body which may



have been caused far back in childhood by mistaken nursing and education.

Disorders of the brain in children are often caused by frightful images which have been thoughtlessly or ignorantly put before the child to induce obedience.

Exciting reading also unduly excites the imagination and produces dreaming and restlessness, which, sooner or later, will have evil effect.

To arrest evil tendencies, heal the diseased, and, above all, to promote what is naturally good in the child, and stimulate it into healthy life, must be our highest aim.

Complete education will preserve to the child its naturally abundant and hopeful nature, which is the foundation for all accomplishments, intellectually and morally; obedience becomes easy and generosity and justice the natural impulse.

This healthy development gives self-control and inspires the child to execute promptly what its will and intelligence suggest.

This may seem an exaggerated estimate to such as have looked upon education as beginning at the school age, but not so with education which



begins at birth. The child is self-poised because free from self-consciousness and alive to all the opportunities of life. Observation sits at the foot of judgment and discretion, and impulse and fancy are trained to serve, not to lead.

This early development of harmony in all the functions of body and mind preserves life in freshness and beauty through the trouble and hardships which come to all, and leads, in a ripened age, to steadfast faith and trust.

Fortified with the knowledge which is offered by the Pestalozzi-Froebel principles and methods, and the experience in the domestic relations and in the kindergarten, the educator may enter upon her life-work full of confidence in the sacredness of her high calling, and feel assured, as much as human beings can be assured, that the children entrusted to her will receive a worthy equipment for a life of uplifted and uplifting service for the human race.













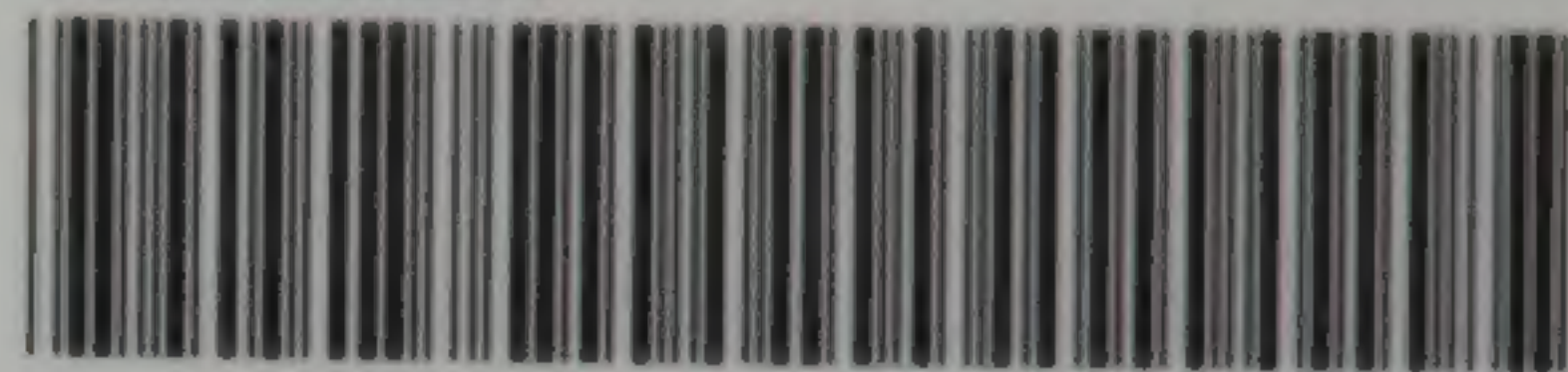






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